

# DARKROOM

PHOTOGRAPHY

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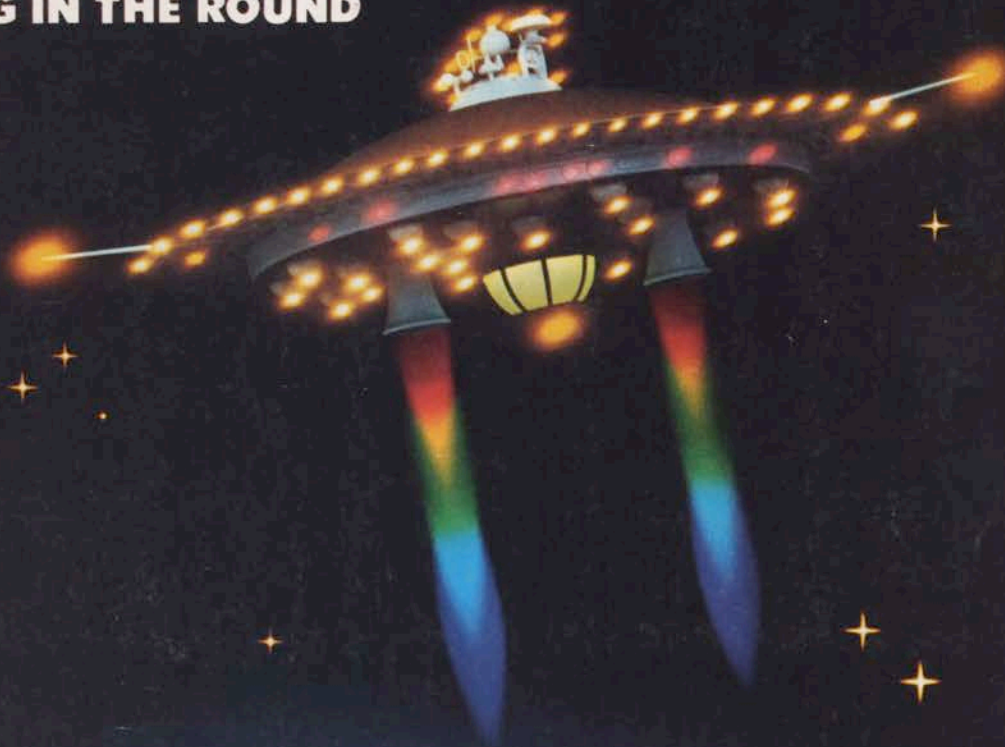
**HOW THE PROS MAKE  
ALBUM COVERS**

**MAKE COLOR PRINTS  
FROM SLIDES**

**PRINTING IN THE ROUND**

**PUT YOUR PICTURES ON FABRIC  
SPECIAL PULL-OUT CENTERFOLD**

**EXCITING NEW DARKROOM  
EQUIPMENT**







## Color by Beseler... Our first name is color. The last stands for quality.

You put a lot into your color photographs. Time, money, creative energy. And what it all adds up to is determined in the final, vital steps: processing and printing. By the quality of the chemistries you use.

If one word can stand for the ultimate in quality, originality and value in the darkroom, that word is Beseler. Color by Beseler chemistries. Tested, perfected and quality controlled to deliver sensational color. And to do it consistently! With the same kind of reliability you've come to expect of Beseler enlargers.

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Beseler Photo Marketing Co., Inc., 8 Fernwood Road, Florham Park, New Jersey 07932



# One of the world's finest enlargers.



The legendary Beseler 23CII, for 2¼" x 3¼" and smaller. A classic design so pure, so versatile in concept that its margin of superiority seems to grow with each year. And now, the revolutionary Dual Dichro 23 Colorhead and incomparable Beseler ColorPro enlarging lenses combine to make the 23CII — more than ever — "the standard for years to come."

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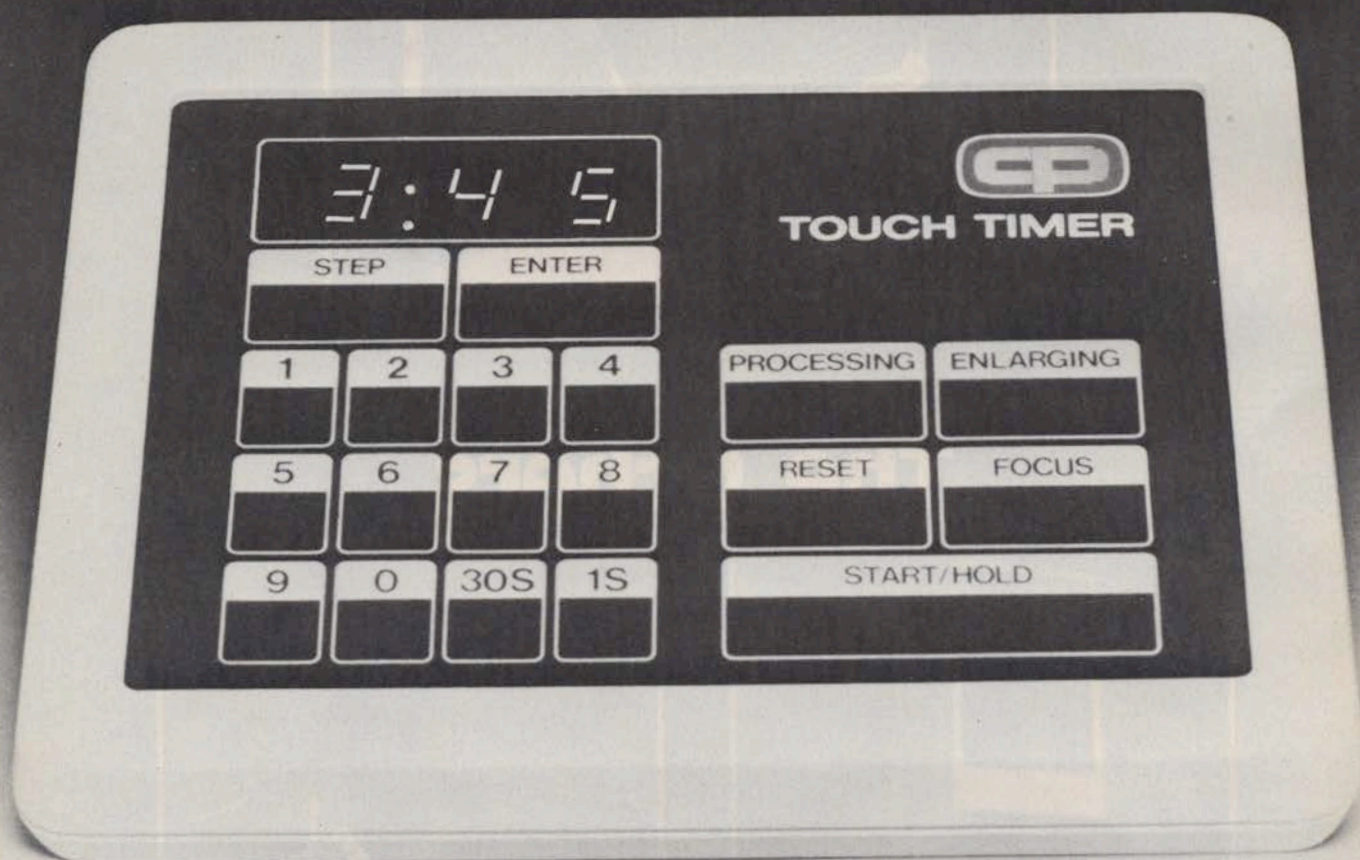
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Beseler...The Official Darkroom Choice



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**Susan R. Keller**

Associate Editor  
**Elenore G. Pred**

Art Director  
**Alicia Landon**

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Contributing Editors

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**Kimberly Torgerson**

Advertising Director

**Mindy Ryan**

Advertising Services

**Richard Clark**

Editorial and Advertising Offices

**609 Mission St.**

**San Francisco, CA 94105**

Subscription Inquiries

**Darkroom Photography**

**P.O. Box 10052**

**Palo Alto, CA 94303**

Original Design Concept

**Kit Hinrichs/Jonson Pedersen**

**Hinrichs & Shakery**

**Sheptow  
Publishing**

DARKROOM PHOTOGRAPHY is the officially endorsed publication of the National Photography Instructors Association, Photo Area, California State University, Long Beach, CA 90840.



In a cramped San Francisco office, seven people bumped into furniture and each other day in and day out for eight months. At times the office bulged even more with photographers eager to display their portfolios and share their ideas. Gradually more and more enthusiastic people discovered that in that office the premiere issue of DARKROOM PHOTOGRAPHY was being created.

During this evolution people would ask, "How do you create a new magazine?" The answer in brief... "with a lot of hard work." At last we have seen the fruits of that labor, and a grand and heartfelt thanks is due to all those who helped DARKROOM PHOTOGRAPHY soar off the ground... staff, contributors, advertisers, and the entire photographic industry for their interest and support. And of course you, our readers who patiently awaited our premiere issue... to you, a special thanks.

Our joint efforts continue with this issue's broad spectrum of ideas, tricks, and tips to stretch your darkroom enjoyment.

Our versatile darkroom experimenter, Tony Freeman, has come up with a clever method to push process your black-and-white film using drugstore hydrogen peroxide.

Darkroom master Keith Williamson talks about his work with well-known photographer Norman Seeff. In an exclusive interview, Williamson describes how he "strips" images into outrageous, surrealistic album covers for stars such as Joni Mitchell and Santana.

And if that's not enough to titillate your eyeballs, in "Color it Cibachrome," professional Cibachrome printer Jessica Collett explains how you can get great results with the convenient Cibachrome Discovery Kit.

Speaking of "discoveries," you won't want to miss our "Close Encounters" centerfold pull-out poster created by George Post. We admired George's work so much that it appears on both the centerfold and front cover! Details on George's darkroom techniques can be found in "Cover Story."

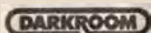
And there's more... Rudy Bender with good, sound advice on keeping your negatives clean, Hank Kellner talking about a money-making file system, and Roger Rosenfeld's unique "Circle Vision" portfolio.

It's a great issue!

*Susan R. Keller*

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**DARKROOM PHOTOGRAPHY, P.O. Box 10052, Palo Alto, CA 94303**





# ONE HEAD IS BETTER THAN TWO.



**The New Vivitar 356 enlarger has both black and white and dichroic color filtration built into one rugged housing. You don't have to buy a separate color head.**

**Best of all, it has the unique Light Pipe™, previously available only in the professional Vivitar VI enlarger.**

**Since one head is less costly to manufacture than two, the 356 is a lot of enlarger for the price.**

Vivitar's unique Light Pipe technology was developed initially for the Vivitar VI professional enlarger.

Now that same advanced color filtration and light integration system is available in an affordably priced, compact, portable, genuinely easy-to-use color enlarger for amateur color printing.

Light Pipe color printing eliminates heat build-up at the negative and speeds color printing times through more efficient light transmission from lamp to baseboard.

The built-in dichroic filters give you up to 200 cc units maximum density filtration. In black and white printing, you use them as variable contrast filters.

Also inspired by the Vivitar VI enlarger is the optical bench design. All critical optical components from the light source through the lens stage are secured in precise alignment on a rigid, vertical "bench."

Another important feature the 356 has in common with the Vivitar VI is the fact that it's a condensor enlarger. Condensors make the sharpest prints,



both color and black and white.

Although the 356 has several advanced features in common with the Vivitar VI, don't think that it's simply a scaled down version of the professional model. The 356 is engineered for an entirely different kind of use. It's compact, portable, and storable in a

relatively small space. It quickly breaks down into three parts without tools; enlarger head, column, and baseboard. Assembled, the three components interlock into a rigid, stable structure. Once you've set it up the first time, you'll be able to assemble it in a couple of minutes.



Unlike the Vivitar VI, which is intended for permanent installation in a full-time, high-volume darkroom, the Vivitar 356 is at



home in any bathroom, kitchen, or laundry room you can make light tight.

The Vivitar 356 is complete as it comes from the packing case. All you need to begin making color and black and white prints up to 11" x 14" on the baseboard (aside from paper and chemicals) is the enlarging lens of your choice.

If you're ready to get into high-quality printing, see the Vivitar 356 first. You'll be a step ahead before you make even your first enlargement.

**Vivitar®**  
**356 ENLARGER**



# DARKROOM

PHOTOGRAPHY

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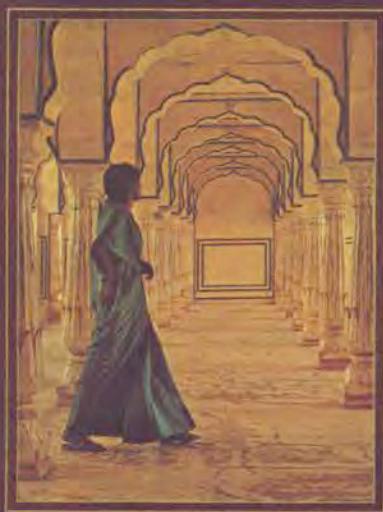
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# GRAB SHOTS



1979

THRU THE LENS  
PHOTOGRAPHIC ADVENTURES

## Take a Trip

The color cover photograph of Thru the Lens Tours' "Photographic Adventures" catalogue is enticing enough in itself to inspire you to go a'traveling in search of such a gorgeous color shot. And indeed that is the purpose of these jaunts: "to assist each group member to capture the best possible visual record of his or her trip and increase his or her photographic capability."

Inside the catalogue is further inspiration in the form of more color photographs as well as details of photo-

oriented trips, ranging from 8 to 65 days on six continents. These tours are arranged to take advantage of the best subject matter and lighting at the various stops on the itinerary. Thru the Lens has had plenty of experience in conducting tours for photo buffs; they started back in 1952.

For details—and a copy of their beautifully photographed catalogue—write to Eric C. Ergenbright, Thru the Lens Tours, 12501 Chandler Blvd., No. Hollywood, CA 91607. A toll-free number, for use outside California only, is 800 423-2471.

## Summer in Venice

Many of the world's renowned photographers, along with students and lovers of photography, will spend at least part of their summer among the canals and palaces of Venice, Italy. For three months, from June 11 to September 16, the Municipality of Venice, along with co-sponsors UNESCO and the International Center of Photography in New York, will feature exhibitions, workshops, lectures, and other events photographic, reflecting the theme "Trends and Masters of the Twentieth Century."

Outstanding exhibitions and collections of photographs from around the world will be featured. These exhibits include: the Alfred Stieglitz Collection; Sam Wagstaff's Private Collection; The Polaroid Collection; as well as exhibitions of the work of Henry Cartier-Bresson, Robert Capa, Diane Arbus, and many more.

Workshops during the three-month period cover areas such as large format aesthetics, creative color, off-camera experimentation, fashion photography, and the ubiquitous zone system. Instructors are a roll-call of famous names in photography from around the world: Pete Turner, Robert Heinecken, Ernest Haas, Philippe Halsman, Christian Vogt, Marie Cosindas, and Lisette Model among others.

For further details, write The International Center of Photography, 1130 Fifth Ave., New York, NY 10028.

## Panic in Darkroom-Land

Some Rodinal developer habitués are reported to have gone into a state of shock upon hearing rumors that Agfa was about to stop selling the stuff in the U.S. Relax, friends... it isn't so; Agfa and its U.S. distributor,

## Scouts Honor



This photo was the top prize winner in the black-and-white category of the 1978 Scout Photo Scholarship Awards, sponsored by Eastman Kodak. Mike Lynch, 15, of Ravenna, Ohio, achieved this striking effect in the darkroom.



Second place in the black-and-white category of the 1978 Scout Photo Scholarship Award went to Jim Doyle, 15, of Utica, New York and his poodle Chris, got up as a proper scout.

Braun North America, know they've got a good thing going. The cause of the rumor is that Rodinal will not be available for a while, while Agfa retools, recaps, and re-labels Rodinal in order to conform to U.S. safety regulations. Braun says Rodinal will be back on photo stores' shelves around summertime.



## Check-Out Checking-Up

This month's gold enlarger award to Fred Picker of Zone VI Studios in Newfane, VT. He is one of those people who likes to check things out. Told by some experts that **x-ray security checks** at airports don't affect film, and told the opposite by others, he tested the theories for himself. For a recent trip, he put all his film—except for one roll—in lead foil bags. When he got home he processed all the film and checked the base density of the unprotected roll against that of the other film. According to Picker, "The protected rolls showed a normal .08 base density but the unprotected film showed a base density of 1.4." His conclusion: "X-rays fog unprotected film." It would seem that some protection is in order. Thank you, Fred.



Elenore Fred

## Favor Granted

Need some financial assistance to pursue your photographic endeavors? The Friends of Photography are offering their annual \$1500 **Ferguson Grant** to a photographer who demonstrates "evidence of notable achievement and continuing serious contribution to the medium."

Applications for the grant will be accepted between June 15 and June 30. If you want information or an application, write Friends of Photography, P.O. Box 239, Carmel, CA 93921.



## An EL Nikkor lens is an inexpensive way to add Nikon quality to your enlarger

You take special care with your photography. You invested in a fine camera. You're on the button with your focus and exposure. And, your negatives are everything they should be. But, when you put them into your enlarger, something happens. The crisp definition, the wealth of detail, the rich colors you know are there, just aren't — not in the prints.

Very likely, the villain is your enlarger lens. (Honestly now, did you choose it as carefully as you did your camera lens?) It actually may be "filtering out" the quality in your negatives, instead of faithfully reproducing it.

The solution is as simple as it is inexpensive. Get an EL Nikkor enlarger lens. It's made by Nikon, specifically for the finest color and b&w enlarging. With designed-in sharpness and color correction to meet or exceed the most critical professional requirements. And, there's no focus shift when you stop down, which is made easy by positive click stops and easy-to-see white aperture markings.

Your Nikon dealer offers EL Nikkor lenses from 50 to 360mm to cover formats from 35mm to 11x14, at very affordable prices. See him soon — and see the difference in your enlargements. Or write for Lit/Pak N-15. Nikon Inc., Garden City, N.Y. Subsidiary of Ehrenreich Photo-Optical Industries, Inc. (In Canada: Anglophoto Ltd., P.Q.)



## Hôpital Lumiere

This hospital, in southern Haiti, is a ministry of Worldteam, P.O. Box 343038, Coral Gables, Florida 33134. The hospital is still under construction, though a surgical unit with wards has been in operation since March of 1977. The investment in the hospital is a gift from the people of the United States. Therefore, in order to raise the necessary funds we need to show people that are interested in the hospital, project pictures of various phases of construction and instances of the help being given to the Haitian people.

We have equipped a darkroom for developing, printing, and enlarging, but at present have no one qualified to activate it. We need instruction. Possibly you could suggest some instruction material that would be helpful.

Frank A. Ineson  
Coral Gables, FL.

Eastman Kodak has a catalogue full of publications, some of which are about the darkroom. In the same catalogue is a list of audio tapes with darkroom instruction. Write Kodak, Dept. 454, 343 State St., Rochester, NY 14650. Another good source is Time-Life's *The Print*, available at most book stores or from Time-Life Books, Time and Life Bldg., Chicago, IL 60611. Amphoto, 750 Zeckendorf Blvd., Garden City, NY 11530 has an extensive catalogue of photographic books as does Morgan and Morgan, Inc., 145 Palisade St., Dobbs Ferry, NY 10522.—Ed.

## Author's Request

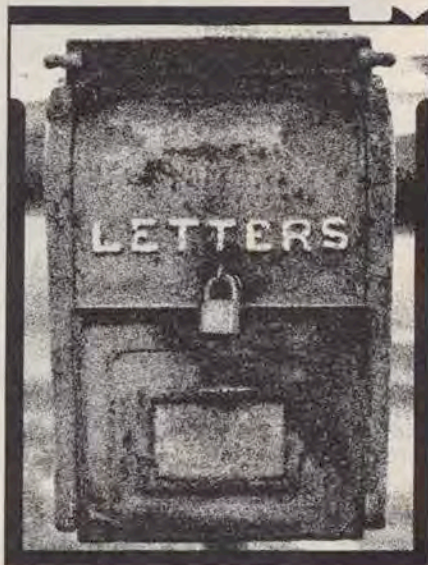
I am currently working on a book about the creative uses of litho film (Kodalith)—both 35mm and in sheets, and I am looking for innovative and imaginative applications. I would greatly appreciate the contribution of ideas from your readers, and will certainly give them credit. Send them to me care of DARKROOM PHOTOGRAPHY, 609 Mission St., San Francisco, CA 94105.

Elinor Stecker  
Larchmont, NY

## More Blunders

Your reader, Walt Zumelmo, entirely misunderstood my article in the January issue of DARKROOM PHOTOGRAPHY. Of course I did not suggest you could separate atomic matter with a homemade stop bath—I said you use a combination of fixer and fresh green chile peppers. I suggest to all of your

# MAIL BOX



readers that before they criticize my writing they take the time to carefully read what I have said.

Arnold Trevor  
Mill Valley, CA

There was no January issue of DARKROOM PHOTOGRAPHY. If Mr. Trevor had bothered to read our note to Mr. Zumelmo's letter in our March/April issue he would have known.—Ed.

## Deja Vu

The long arm of coincidence strikes again. Purchased Vol. 1, No. 1 of DARKROOM at a local photo shop. Read it cover to cover. Have great hopes for the direction charted for the magazine.

The address, 3129 Fillmore, hung on the edge of my mind until I gave up and checked it out. If I am correct, your offices are on the second floor of a building situated at the corner of Pixley and Fillmore Streets. Then it was a 6 room flat, rent \$55 per month. Know the place well. I should. We (wife & children) dwelled there from Sept. 1955 to Dec. 1958. This was the location of my first darkroom—sans water—but a den of excitement. Another memory was the

day our oldest daughter was born while friend wife was occupying the back porch john. I was the midwife.

While living there I attended the California School of Fine Arts where William (Bill) Quandt, along with Pirkle Jones, were teaching. Ansel Adams, a frequent lecturer, was doing quite a bit with the Polaroid cameras and films. Used to cut my sculpture class to help construct the darkroom. I believe the Beseler enlargers were just arriving on the scene, giving Omega quite a challenge.

Tempus Fugit. So here I am after some 20 years of a photographic dry spell; I have returned to photography, (my son-in-law, a pro, gave me a camera) and needing all the darkroom help I can get.

I hope the magazine progresses as beautifully as the daughter who was also born at 3129 Fillmore.

Frank G. Craig  
LaConner, WA.

## No Darkroom

Although I've never set foot in a darkroom, I enjoyed reading your first issue very much. If one is interested in photography it makes sense to know about the developing and printing processes, whether you do them yourself or not.

Alan Thatcher  
Nashville, TN

## Attention Rental Darkrooms

We are planning to publish a survey of rental darkrooms in an upcoming issue. We want to hear from rental darkroom owners and managers who wish to be included. Please send information about your facility—hours open, costs, enlargers, equipment for color—to Rental Darkroom Survey, DARKROOM PHOTOGRAPHY, 609 Mission St., San Francisco, CA 94105.

## Sorry We Goofed!

Two errors were noted in the Premiere issue. The Static Neutralizer shown in "Product Review" actually lists for \$40 and the lens supplied with the Omega Concept Six enlarger reviewed in "Product Probe" is a 50 mm f/4 Rodagon. Ed.

Send letters to: Mail Box Editor, DARKROOM PHOTOGRAPHY, 609 Mission St., San Francisco, CA 94105. Be sure to include your name and address. We reserve the right to edit letters for brevity and clarity.



# You need. We heed.



**Need high-quality black-and-white enlargements from color negatives?**

Discover new KODAK PANALURE II RC Paper. Unlike ordinary black-and-white enlarging papers, which are blue-sensitive, this unique paper is panchromatic. So you can translate *all* the colors in the negative into appropriate shades of gray in the print. You can even alter the tonal balance by using a filter over the enlarger lens.

PANALURE II RC Paper has a water-resistant base with optical brighteners for crisp, bright images and a developer-incorporated emulsion for fast processing. You get tough, flexible prints in minutes when you tray-develop. Or in as little as 55 seconds to a completely dry print with a KODAK ROYALPRINT Processor, Model 417. Dries to a gloss finish without ferrotyping.

For better gray-tone reproduction from color negatives, faster, make PANALURE II RC Paper your choice.

© Eastman Kodak Company, 1979

## Kodak Panalure II RC paper





**I have some perfectly clear spots on some important negatives I recently developed. What caused them and what can I do about them now?**

**Dennis Mansdale, Braintree Essex, England**

They appear to be pinholes caused by air bubbles which were stuck to your film during development. The bubbles prevented any developer from reaching the affected film areas. The thing to do next time is to tap your tank firmly on the counter immediately after pouring in the developer; this will dislodge any bubbles.

Since you already have clear spots on your negs, try this. Apply a small dot of Kodak Opaque to each spot and print the negatives as you usually do. The resulting white spot on the print can be spotted out with spotting colors (such as Spotone available from Retouch Methods Co., Chatham, NJ, 07928) much more easily than the black spots you'd get without the opaque.

If the spots on your negatives are small, you may find it difficult to apply the opaque without increasing the size of the troublespot. One solution is to visit a graphic arts supplier in your area and ask him to show you his felt-tipped pens filled with opaqueing ink. These vary in size from standard pen points to very fine fiber tips that will allow you to fill in tiny spots. If you use one of these with a magnifier, you will have about as much opaqueing control as you can expect.

**How can I retouch a portrait made on 35mm film?**

**Howard Sanders, New York, NY**

Verrry carefully! Actually, if you have access to a large-format enlarger, you can make a 4x5-inch duplicate negative on Kodak Professional Direct Duplicating Film type SO-015 (25 sheets of 4x5-inch film is about \$6) and retouch that big negative a lot easier. Type SO-015 can be handled under a red safelight and processed just like a normal black-and-white enlargement except for a stronger (1:1) mix of the developer. You may have to ask your photo dealer to special-order the film from Kodak.

**Where can I obtain programs for our camera club meetings that will increase our darkroom knowledge?**

**Peter Pike, Seattle, WA**

For starters, try the Audio-Visual Library, Eastman Kodak Co., 343 State

# Q&A



Street, Rochester, NY 14650. They will send you a free catalog listing about 50 of their films and slide shows, many of which are darkroom-related. It's all free except for return postage which you pay.

You can also call the Photographic Society of America (PSA) chapter nearest you. They have some programs available, at least from some of the local chapters. If you don't have access to a local chapter, write PSA, 2005 Walnut St., Philadelphia, PA 19041.

And lastly, the National Press Photographers Association (NPPA) offers a variety of programs at very low rates. Contact Charles Cooper, NPPA, P.O. Box 1146, Durham, NC 27702.

**I've started saving up for a wide angle lens. Until I can afford one, is there anything that I can do in my darkroom to get a wide-angle look?**

**Dick Brenner, Millburn, NY**

Try making panoramic photographs. Simply take two photographs of your subject, a left portion and a right portion. Slightly overlap the coverage along the center of the subject and be sure the camera is perfectly level as you fire the shutter.

In the darkroom, make two matched prints with exactly the same density and same degree of enlargement. When they are dry, trim the border off one of the prints where the center of the scene will be, and assemble the two prints into one

wide shot. Rubber cement can be used to secure them in place if you intend to copy them photographically; this will enable you to make a final, seamless print from the resulting negative. Otherwise, use a non-staining photo mount adhesive such as Scotch Photo Mount Spray.

If you avoid subjects closer than about 10 feet from the camera in the overlapping areas when you shoot, the match of the two prints will be excellent. If you wish, you can combine three or four shots in this way. Some people make entire 360 degree panoramas in this fashion, but the darkroom work must be done with care to create a good match.

**I need to make some awards and want to do them photographically on metal plates of some sort. Is there any way to do this?**

**Stan Bellacerra, Cedar Rapids, IA**

The Fotofoil Company, 4400 N. Temple Blvd., El Monte, CA 91734, can send you information about their anodized aluminum sheets bearing light-sensitive resists. These materials produce brilliant colors against aluminum backgrounds and are easy to work with.

A second method is to coat a continuous-tone emulsion onto sheets of Photo-Aluminum made by the Rockland Colloid Corp., 302 Piermont Ave., Piermont, NY 10968. This material, obtainable at many photo stores, is handled just like enlarging paper.

Either product can be glued to wooden plaques or tiles for display if you like.

**I can't seem to dry my negatives without getting all kinds of junk on them. What can I do to clean up my act?**

**Michael Preiss, St. Louis, MO**

You must get your water from the same sort of system that my neighborhood does... it's full of fine gravel and who knows what else... and we drink the stuff! I have found it necessary to install a water filter to avoid getting my negatives all dirty in the wash.

I have found two other techniques that help. First, make up a bath of wetting agent using distilled water. This can now be obtained from machines at many markets for about a dime per half gallon, or else is available in plastic bottles. After washing the film, I give it 30 seconds in the wetting agent and then wipe it down with a special tissue called Photo-Wipe made by Premier,



500 N. Spaulding Ave., Chicago, IL 60624. The cost for a box of 75 wipes is only \$3.95.

I usually wipe off only the nonemulsion side of the film, although it is okay to use them on the emulsion side if you are careful, and you need your negatives in a hurry. Be sure to use a new Photo-Wipe each time. They seem to work best on 35mm and 126 film incidentally.

If you are working at home and can tie up the bathroom for a while, here is another surefire method. Run the shower for a few minutes to steam up the room. This causes any dust particles in the air to settle out with the moisture. Hang the film in the bathroom and leave it to dry overnight. Your negatives will sparkle.

**I bought quite a bit of Agfa grade #6 enlarging paper for a school photo project but now I haven't so many negatives that require such a high-contrast paper. Isn't there some way to lower the contrast of this excellent paper?**

*Margaret Sterling, Susanville, CA*

Install a dim light, such as a night light, with a 7½-watt lamp about 8 feet from your work space. After exposing the paper to a normal negative, flash the paper for a second or two (make a test in order to determine the exact times) with the white light. This flashing can convert grade #6 paper to anything from grade #1 to #5. Some printers have found that flashing before exposure works better for them.

**I use a roller processor for my color print developing. I clean it regularly but it has developed some black, tar-like stains in the developer section that are resistant to all cleaners and solvents I have tried. How can I get rid of this stuff?**

*Donna Joannes, Milwaukee, WI*

It is a tar which is a by-product of color developer. I have found that Lysol brand Toilet Bowl Cleaner is the only thing that will clean it off easily. Simply squirt the cleaner on, swish it around a little bit (I use a small paint brush) and rinse it off. I fill the developer tray with baking soda and water for a few minutes following this treatment to chemically neutralize everything, and rinse thoroughly.

Answers to Q&A are prepared with the help of Tony Freeman.

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# READERS TIPS



## Plug In

I finally got tired of hearing the phone ring while I was in the darkroom and not being able to answer it. The solution was to install a plug-in type wire on my telephone and a jack in the darkroom. It was fairly easy since my local radio store sells a complete line of parts for telephones (some hardware stores do, too). I ran an extension line along the baseboard from my kitchen to my darkroom. Now I just carry my phone along with me when I go into the darkroom and never miss a single call!

Mindy Shopes  
Los Angeles, CA

## Stick 'Em Up

One of the easiest methods I've found for hanging up small objects in the darkroom—everything from scissors to cassette openers—is a flexible magnetic strip. I found mine in the hardware store; it's called "Magiband," is 6 inches long, and costs \$1.25. A strip of it also came in handy for fixing my easel when an arm that holds the print broke off.

Max Bollock  
Belmont, CA

## Trimming Negs

I like to file my negatives in those very convenient plastic sheets that allow me to make contact sheets without removing the negatives. I punch holes in the contact sheets and file them along with the corresponding negatives in a three-ring notebook binder, with pertinent printing data written on the back of the contact sheet. I have, however, encountered one difficulty: the corners of the negative

strips frequently catch, preventing the strips from entering the sleeves. My solution is simple. At the edge of a strip that will be pushed into the sleeve, I cut off the sharp corners. You can round them, but just cutting them on a diagonal also works like a charm.

Alvin Katz  
Purchase, NY

## Slippy Clip

After a while my spring-type clothespins—the ones I use for hanging up my RC prints and negs—began to lose some of their springiness. I solved the problem by putting a small nail—from the outside in—at one end of the pin where it "clips" the film or paper. The point of the nail should protrude only slightly to hold fast.

Belle Reilly  
Tonawanda, NY

## Tops on Top

If you're like me, you may spend precious minutes fumbling with negatives in the carrier before you get them in with the image going in the proper direction. End the fumbles by putting marks, with a permanent felt marker, on the inside of the carrier. Indicate where the top of the negative should be, both for horizontal and vertical formats.

Marlene Dodge  
Cleveland, OH

## Dish Drainer Dryer

I have learned to organize everything in my darkroom since I only have a limited amount of time to spend there. One of the

tools I use for efficiently drying my tanks and reels between uses is an ordinary household dish drainer. It allows air to circulate through the reels while supporting them in an orderly fashion.

Roger O'Dey  
Pueblo, CO

## Clean and Clear

When I could no longer read the data sheets I'd tacked up on the walls of my darkroom because of all the stains and splashes, I looked for a way to keep them clean and readable. I knew I could have them laminated, but I discovered at the art supply store that I could do it myself easily with sheets of adhesive-backed acetate or mylar. An 18x24-inch sheet, enough for a couple of pieces of paper, costs less than a dollar.

Christopher Rather  
Baton Rouge, LA

## Whipping Up Chemicals

A simple gadget from the kitchen that I've adapted for darkroom use is a whisk. For those of you who never beat anything, a whisk is a wire gizmo used to whip up eggs. I use it for whipping up chemicals. Works better than the plastic rods sold for that purpose.

Connie Betterman  
Chanute, KS

## Spray Away Forever

I found a handy gadget for my darkroom at my son's favorite model airplane shop. For an initial investment of \$40, I bought an endless supply of pressurized air for cleaning off my negs and enlarger lenses. A small air compressor does the trick, and will pay for itself pretty quickly when you figure all the cans of compressed air you'll save.

Sam Glick  
Provo, UT

## Light Tight

I bulk-load my film, and used to have quite a problem with fogged edges. I thought it was a darkroom problem, but I found I could cure it by not rewinding all the way when I finish shooting a roll of film. It seems that when the film is rewound all the way, some light may leak through the tiny opening in the cassette. So just make sure that you leave a tongue of film hanging. You can usually feel, as you rewind, when the film has left one spool, yet hasn't disappeared into the

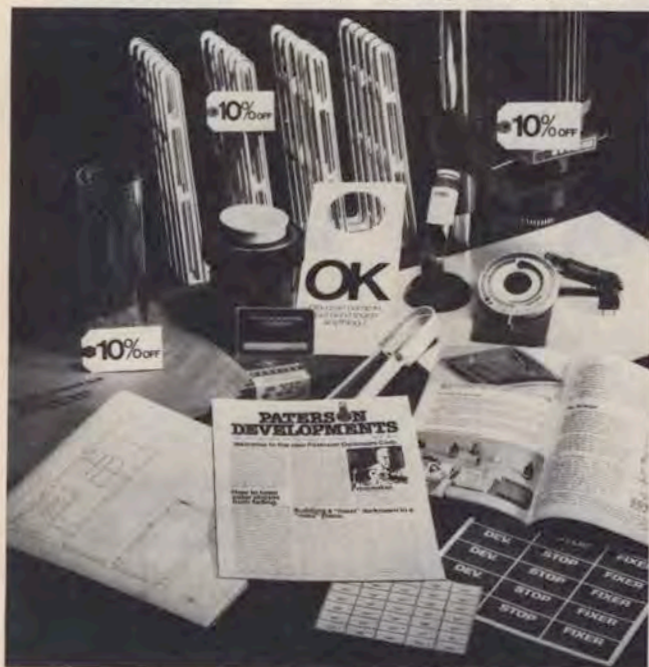


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- A wallet-sized membership card valid for one year. (Or for an extra year if you take a two-year membership.)

- A quarterly newsletter, *Paterson Developments*, with all these special features: Darkroom techniques...new product news...classified ads (buy, sell, or trade) at no charge for 25 words or less...a "letters" column to solve problems and give advice...and in each issue, a critique of a print telling why it was successful and how it could have been even more effective.

- A complete set of easy-to-read blueprints showing how to set up or expand your darkroom, in either a permanent or a temporary location.

- A Paterson "how-to" book on the darkroom, giving all you need to know from A to Z. The book *alone* is a \$6.95 retail value.

- A darkroom doorknob sign to avoid disaster.

- 24 pressure-sensitive, chemical-proof identification labels for all your chemicals and trays. Plus separate labels for dating the chemicals.

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cassette. Leaving the tongue of film sticking out has another advantage: I can cut it off in daylight before loading my film reels, rather than fumbling with scissors in the dark.

Tony Treehorne  
Presque Isle, ME

### Countertop Cover-Up

When I built my darkroom I didn't have the funds to put in Formica countertops, but I found a great, cheap substitute. Epoxy paint (Zylolite is one brand) applied on top of plywood has proven to be durable and impervious to water. Costs about \$7 a quart; a quart covers about 100 square feet. I can now say, after ten years, that it holds up fine. I used a light gray color; seems easier to keep clean than pure white.

Mark Gordon  
Billings, MN

### Straight Horizons

At last I have figured out a way to print straight horizons even if I tilted the camera when I took the picture. My secret weapon is a sheet of graph paper, the kind that is ruled in a 1/4-inch grid. I taped this to my enlarging easel, making absolutely sure that the lines are parallel to the easel's arms. Now I have an alignment guide when I focus my negative.

Leslie Thomas  
New York, NY

### No More Drab

Did you know that you don't have to be limited to drab black-and-white in the darkroom? I painted the walls around my enlarger orange. It looks white under the safelight, but absorbs most of the light that could fog black-and-white printing paper.

Ken Little  
Carmel, CA

### Clump! Clump! Clump!

I never could get my chemicals thoroughly mixed when I poured water onto the dry chemistry. Seems I had the procedure backwards. When I started pouring the chemicals into the water—slowly, while constantly stirring—no more clumps.

John Hall  
Little Rock, AK

We will give a free one-year subscription to readers who submit tips that we publish. Send your tips with a self-addressed, stamped envelope to "Tips," DARKROOM PHOTOGRAPHY, 609 Mission St., San Francisco, CA 94105.

Somewhere, somehow, some people forgot about the corners of enlargements. They're supposed to be as sharp as the center and receive very nearly equal illumination.

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# DIARY OF A DARKROOM IMPROVISOR

No photographer develops a personal style during a single session in the darkroom. Just as in any hobby or art, you must do it wrong—over and over—before you can do it right.



The errors and blind alleys encountered in the darkroom actually contribute to the developing relationship between the photographer and his or her medium. Photographers are fortunate that the results of each new inspiration can be seen within a matter of hours. After a day of darkroom work, a photographer may have gone through a phase or worked out an idea which might have taken a painter several years to finalize or a carpenter months to build. In one important sense, the photographer develops as quickly as his film and paper.

To keep track of my progress in the darkroom, I decided to keep an intermittent darkroom "diary" chronicling my adventures and misadventures. At the time that the entries excerpted here begin, I was in the process of switching film formats. I had been taking pictures with a 35mm camera, then enlarging and printing pieces of the negatives that I liked. The pictures I took began to seem to me to be those that I thought I *should* be making—not really my own but things I had seen before. I felt frustrated with what I was producing, uncomfortable with a 35mm format, which felt too "fast," too easy to me.

Out of that frustration, I began using the inexpensive Yashica-Mat 2¼-inch format camera that I'd had around for a while. Suddenly, a new way of seeing and taking pictures! Because it was new to me, I could shed my preconceived notions of what I ought to be doing. And because it was a slower way of shooting, I could look and see what was really there.

But the new images required changes in what I had been doing in the darkroom. The diary which follows is a history of my problems, my experiments, and my frustrations with the limits of my

equipment and money. I want to share the personal process recorded here because it points out one way to "improvise" a useful and comfortable darkroom style without the necessity for fancy and expensive equipment, by simply employing common sense, intuition, and the machinery at hand.

■ **February 7, 1977—11:00 p.m.**  
The new 2¼-square contacts look so much cleaner than my latest 35mm's—no extraneous backgrounds—no unpleasant surprises. They seem to show more control, and more confidence—definitely easier to look at.

■ **March 3, 1977—2:30 p.m.**  
Can't keep switching from 35mm to 2¼-square and then back again. Going from

**"I should have realized that with a cheap camera, cheap lenses, and a cheap enlarger, only a fool tries to make sharp pictures."**

rectangle to square to rectangle destroys any consistency in my images. I'm going to drop the 35mm work altogether, at least for a while. Slow, deliberate shooting with the 2¼ seems more suited to me right now, and my latest shots of legs and shadows have convinced me that the square is a better geometrical shape for me to work with. No need to crop. And my Yashica 2¼ camera is cheaper than my 35mm!

■ **March 7, 1977—12:00 mid.**  
Thinking I'd rarely use it, I bought a

cheapo enlarging lens for the 2¼-square format. Now I notice it doesn't seem nearly as bright or sharp as the lens I was using for the 35mm work. But I can't afford to buy a new lens right now!

■ **March 11, 1977—12:30 a.m.**

The full-frame images work nicely, but the edges need more definition. The lens causes part of the problem, but I think the large negatives may be more likely to warp, which would only exaggerate any lens deficiencies. The solution may be a glass negative carrier.

■ **March 13, 1977—4:00 p.m.**

I checked some prices on glass negative carriers—even the cheap ones are expensive. I could file out my metal carrier to get a black border, but I still need the glass to flatten the negatives. I mentioned the idea of simply putting the negatives between two small pieces of window glass and the guy at the camera store said it wouldn't work because I'd get "Newton's rings."\*\* But it won't cost too much to try it—we'll see.

■ **March 22, 1977—11:00 p.m.**

I tried my "window glass" carrier for the first time, with very nice results. And so far, no problems with rings or flares. The black borders improve the images remarkably—they really seem appropriate. They also add more definition and sharpness—or give that impression. The glass does add four additional surfaces to make dust-free, but it's worth the additional time and energy. And focusing now seems easier—but it's still not perfect. The lens focus "falls-off" in the upper left corner, and of course the fall-off now shows up in the black border as well.

■ **June 3, 1977—12:00 noon**

The new beach pictures look terrific. I

\*Newton's Rings: Rainbow-like rings which may appear on the print when film touches a glass surface in the enlarger.



was so excited that I finally tried printing larger, as I'd been planning and putting off for months. I went all the way to 16x20. Rather than put out \$40 or \$50 for new trays right away, I decided to assemble a 16x20 print using 8x10 sheets of paper, just to see what really big prints would look like. I used four 8x10's laid out side by side to make a 16x20 surface to print on. The images are really fantastic that size—they take on an entirely new quality. But there seems to be more need for burning and dodging, which I hate with a passion.

■ **June 26, 1977—11:30 p.m.**

Tonight I took some negatives over to my friend's darkroom, where I could print real 16x20's. Unfortunately, they all looked good—that means new trays, more chemicals for each printing session, more expensive paper, more expensive mistakes, more expensive mats... But next to the 8x10's, the large prints are so much more powerful—there's no way I can stick with the small size now. Money, money, money...

■ **July 27, 1977—10:00 p.m.**

As a birthday present to myself—new trays and two packages of 16x20 paper. And tomorrow night, the first official printing with the larger size.

■ **July 30, 1977—11:00 p.m.**

I tried a new trick tonight after talking to Norman Seeff on Saturday—diffusion. I got some old nylon stockings and stretched one under the lens during the exposure and it works! I don't have the embroidery hoop he suggested, but holding by hand worked fine.

■ **August 4, 1977—11:00 p.m.**

I'm using the nylon for all the pictures now—and it's so nice. The blacks bleed mysteriously into the whites—and everything is glowing in the pictures. The borders are soft and fuzzy and very rich. And I've realized that two big problems have almost disappeared thanks to the use of diffusion. First, the dust problem is now gone, since the diffusion eliminates any sharp white spots—still a few bits of touching up with Spotone to do, but nothing difficult. And since the image is now all soft, focusing is much less critical and no fall-off on the edges is noticeable, at least at f/8. Everything seems to be slipping into place—there's no need to fight the machinery anymore. I should have realized that with a cheap camera, cheap lenses, and a cheap enlarger, only a fool tries to make sharp pictures.

■ **Sept. 15, 1977—10:30 p.m.**

I spent most of the day trying to find a good 16x20 easel I could afford. I had planned to print tonight, but the sheet of glass I was using to flatten the paper under the enlarger cracked.

■ **Sept. 18, 1977—1:00 a.m.**

Tonight I printed without an easel, and







without any glass. Actually the RC paper lies nearly flat by itself—and I rather like the effect of the slightly rounded image edges and corners.

■ **Sept. 23, 1977—12:30 a.m.**

I'm lucky I never found an easel to use with the 16x20 prints! I've saved a chunk of money and get a special effect I like—rounding the corners adds to the softness of the images very nicely. But new problems with the paper. Ifospeed #4 is much too much trouble, just too much contrast—I can't coordinate holding the nylon while doing all the dodging and burning that's required. The #3 doesn't seem to have the super-black blacks I want. I may try the #3 with the Ethol LPD developer, instead of the Dektol—didn't someone tell me the tones are nicer, colder?

■ **October 12, 1977—1:00 a.m.**

Could be my imagination, but the new developer does seem to make a difference. The blacks seem especially improved—now almost liquid, like India ink—and the borders are much more intense. And with the addition of the selenium toner, it's even blacker—though too much toner makes the whole print turn purple, or even red-brown, neither of which will do for my images.

■ **December 9, 1977—11:30 p.m.**

Now I've switched back to Agfa paper—fiber-base instead of RC. Since I'm toning everything it doesn't save much time to use the RC, and I've always liked Brovira's tones. I've started adding a bit of benzotriazole\* to the LPD, which allows me to develop the blacks longer while the whites are held. I'm having trouble, though, figuring out the correct dilution for the benzotriazole.

■ **January 16, 1978—4:30 p.m.**

Today is the first printing session since getting in from the cold midwest—I've accumulated rolls and rolls of film. I've lost the black plastic "window" for the negative carrier—simple chore to make another, but I'm going to pay more attention to the size of the hole this time—possibly make it bigger, for nice thick fuzzy borders around the images.

■ **January 19, 1978—2:00 a.m.**

Finally, all the mechanical nonsense seems out of the way and I can really concentrate on the pictures. I find myself looking around me all the time—looking for nice black blacks and imagining them bleeding and glowing under the enlarger. Couldn't be happier. ■

\*Benzotriazole: An organic chemical which causes the paper developer to delay action on very light or near white tones. Also sold as Anti-Fog #1 by Eastman Kodak.

Craig Morey is the Director of Camerawork Gallery in San Francisco. His work has been exhibited in galleries in the U.S. and Europe, and published in Artweek and Picture Magazine among others.



# THE LATEST AND GREATEST

**DARKROOM PHOTOGRAPHY** went to the Photo Marketing Association's (PMA) 55th annual show in Chicago. This is the event that photo dealers from around the world look forward to in order to learn what new products the various photographic manufacturers and distributors will be offering during the coming year.

From the Pick Congress Hotel in Chicago, it's only a short walk to the Conrad Hilton and Blackstone Hotels, where the PMA's convention was held. But for a Californian whose confirmed hotel reservation at the Blackstone was not honored (travelers beware!), a one-block hike in Chicago's 21°F temperature can be brutal. The weather notwithstanding, we still were able to visit almost every one of the 1,013 booths in an effort to bring you the most significant darkroom innovations.

Although many of the products introduced at the PMA show will not be available for a few months, the wait, for many of us, will be well worth it. The convenience and versatility of a number of these products provide us with some solutions to problems we have all encountered.

Among these latest photographic innovations are a welcome few that will solve some problems and at the same time save some money. Both **Fuji** and **Kodak** have introduced 12-exposure rolls of 35mm color film. The shorter film lengths are a convenient way for photographers to see the results of their efforts more quickly and with less expense. Fujicolor's 12-exposure roll will cost \$1.80, while Kodacolor II 12-exposure will cost \$1.76 and Kodacolor 400, \$2.20 per roll.

Another money-saving device is a handy gadget from **Silver Recovery Sys-**

**Super Chromega C-700  
Dichroic Lamphouse**



**3M C-35 Positionable  
Mounting Applicator  
With Adhesive**



**Unicolor Water Bath**



**Premier Color  
Processing Drum**



**tems**, affordable for a home darkroom enthusiast to recover much of the silver that heretofore has disappeared down the drain. The Woogcell Hand Tank Silver Recovery Unit is one of the most exciting new products we saw. Previously silver recovery was only feasible for large professional print labs. This unit, however, recovers silver from up to ten gallons of solution per month. The price is only \$39.95, and according to the Silver Recovery Systems people, it should eventually pay for itself. In fact when the unit is full, it's worth about \$300 in silver. It's available from Silver Recovery Systems, 23800 Commerce Park Rd., Beachwood, OH 44122.

## PAPERS & CHEMISTRY

Silver, or the lack of it in photographic paper, is of great concern to not a few photographers. At a time when many manufacturers are saving money by moving away from silver-based papers, **Ilford** has promised a new high quality silver paper. The long-awaited Ilfobrom Galerie enlarging paper for black-and-white archival printing will finally be available in early summer. Users of Ilfobrom Galerie paper who are seeking maximum permanence will want to try the new paper along with Ilford's new Ilfobrom Archival Chemistry Processing Kit. The kit consists of developer, stop bath, fixer, and archival wash aid concentrate, sufficient to process 100 sheets of 8x10-inch paper.



# IN DARKROOM EQUIPMENT

Ilford is also adding a pearl finish paper to its Cibachrome line for color printing. Called, Cibachrome "A," it's an RC (resin-coated) paper with a semi-matte finish and medium weight.

From **Agfa** comes the new 312S RC paper. Agfa is so confident about their new paper that their booth featured a mini contest. We were asked to identify which print was made on the new 312S and which on their older Agfa Brovira. It was a tough test!

With color printing papers as expensive as they are, it's a bit scary to think of wasting any. Remember your first color printing experience . . . all those sheets of paper thrown out because of off-balance filtration . . . not to mention the frustration from wasting time and money, test after test after test. We discovered a fantastic new product from **Vivitar** that will help end time and paper waste for good. The Color 1,2,3 Kit is intended to provide a simple method for determining exposure time and color balance. The components of the kit are a color filtration chart, a test print easel, and a reusable data chart for recording and remembering your calculations. The complete kit lists for \$21.95.

Black-and-white printers were not forgotten. We discovered **Optimate** at the **Metro Supply Co.** booth. **Optimate** is a "system" for developing film which, they claim, has an expanded exposure range and fine grain. According to **Optimate**, it allows a doubled ASA without the grain problems usually associated with push processing. And, with a short water presoak, their special stabilizer alleviates the need for washing your film and paper at all! Then just immerse in **Optiflow** for 1 minute and dry. We'll be eager

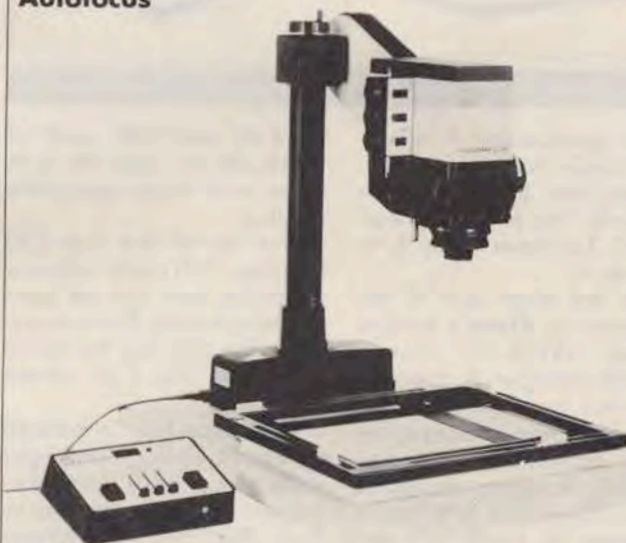
## Beseler Color Pro Enlarging Lenses



## Silver Recovery Systems Woogcell Unit



## Leitz Focomat V35 Autofocus



## Paterson Thermodrum Color Processor and Agitator



## Vivitar 356



## McDonald Prismacolor Pencil Set and Spray



to test it. For more information, contact Metro Supply, Box 22159, Sacramento, CA 95822.

**Paterson's** PMA announcement came in the form of "money savings" rather than "new products." Tear off the \$4 coupon from any Paterson ad (see page 49 last issue) and apply it to the purchase of their Acucolor 3 liquid chemistry. The list price of a bottle is \$5.95. Paterson is also "giving away" a \$59.95 agitator with the purchase of their Thermodrum color processor. Together the units control temperature and agitation. Both Paterson offers are good through July 31, 1979.

## TEMPERATURE CONTROLS & AGITATORS

Even with the newest chemistry, success with color depends heavily on temperature and agitation control. **Unicolor** has developed several devices to control temperatures of both water and chemicals.

The **Unicolor Basic Temperature Controller** (list price \$180) controls the temperature of the water alone, while a deluxe model controls the temperature of both chemicals and water. It lists for \$250. The **Unicolor Water Bath** keeps bottles of processing solutions at the proper temperature with a simple attachment to a mixing faucet or by connecting with the **Unicolor Deluxe Temperature Controller**. List price is \$39.95. The water bath consists of a polyethylene tub, six plastic storage bottles, a lid, 6 feet of PVC hose, and a snap-on faucet connector.

An interesting innovation from **Premier** is a Roll Film Tank Holder, designed to be used with the Universal Color Drum Agitator. With this combo, you can automatically agitate your film while processing. Continual agita-



tion saves on costly chemicals and time while providing streak-free, evenly developed negatives.

Premier also introduced a new color drum designed for daylight processing of color prints with any appropriate color chemistry. The 8x10-inch drum can easily be converted to an 11x14-inch size with a center tube extension.

The news from **Colourtronic** is a unique Turbo-Drive system for processing color prints in Colourtronic's daylight processing drums. The Turbo-Drive unit rotates the floating drum in a temperature-controlled bath at a uniform speed. Turbo-Drive systems start at \$59.50 for a complete 8x10-inch processor, or \$119 for an 11x14-inch unit without temperature control. For control of temperature, Colourtronic immersion heaters are available for convenient use in most any developing tray, starting at \$29.50.

You can buy the complete system—an 11x14-inch Turbo-Drive, two processor drums, and a 200-watt heater—for just \$149.50.

## THE ENLARGERS

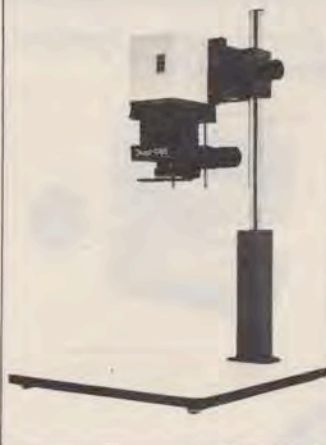
Who can wait, once their film is processed, to see prints? That is why at the heart of the darkroom—and the darkroom enthusiast—is the enlarger, and manufacturers went all out to display their newest, most improved enlarging machines. No, it won't leave the darkroom to shoot the picture for you!

The newest are Vivitar's 356, Leitz's Focomat V35 Autofocus, and Elmo's Hansa H-2000.

The **Vivitar 356** answers the prayers of the people who have no permanent darkroom space. It easily disassembles into three parts for easy compact storage. It includes Vivitar's unique light-pipe design, which mixes light evenly and does not throw off heat that might distort the focus of negatives. It lists for \$415.

The **Leitz** has a "floating" dichroic head and autofocus system, that permits easy counter-balanced movement

**Durst C65**



**Philips' "Electronic Tri-One"**



while composing. A 40mm wide-angle Focotar f/2.8 enlarging lens is included with the Leitz. The price is a hefty \$1812. You have to see it, to believe it.

On the other end of the spectrum is **Elmo's** budget priced (\$139.95) Hansa H-2000 enlarger. A good investment for beginners, particularly since it allows for easy conversion to color printing, it comes equipped with a 50mm f/3.5 lens, and is capable of 11x14-inch enlargement on the baseboard. Even enlarging to mural size is possible by swinging the enlarger head into a horizontal position and projecting on a wall-mounted easel.

A fantastic new enlarger for both beginners and advanced color printers is the **Philips Electronic Tri-One** Color System, an enlarger with a built-in color light source which is electronically controlled by a separate unit at the baseboard. You can use either "positive" or "subtractive" color printing methods! Philips, a Dutch company, is the first to introduce an electronic color system of this type. Although not for certain, it looks like Hindaphoto of Long Island will be the U.S. distributor. It will not be available until this fall.

**Durst**, long-time makers of professional quality enlargers, has two new models,

the C65 and C35, each of which can be used for both color and black-and-white printing.

The top of the line C65 handles 2 1/4-inch square negatives and can be converted to handle 35mm negatives. The C65 lists for about \$269 and the C35, about \$225.

**Unicolor** has introduced a space-saving enlarger called the 35-S Mini Enlarger; it's only 24 inches high. The 35-S incorporates every essential feature needed for both color and black-and-white printing. It prints 8x10-enlargements on the baseboard, and the head can be turned 90 degrees for wall projection. Its list price is \$119.95.

**Berkey Marketing's** Omega hasn't redesigned its best-selling enlargers. They just improved the lamphouse system. The new Super Chroma C-700 Dichroic Lamphouse has a diffusion light system that suppresses dust and scratches, resulting in better quality prints. Best of all, the new lamphouse system is fully compatible with most of the previous Omega enlargers.

In addition to the new lamphouse systems, Omega has developed an improved medium format C-700 enlarger. The C-700 has an increased maximum film

format of 2 1/4x2 3/4 inches, allowing the printmaker a choice of nine film carriers for greater printing flexibility.

## LENSES & ACCESSORIES

Along with manufacturer's advances in color enlarging systems, the new product trend can also be seen in enlarging lenses.

**Beseler** has developed a range of six-element Color Pro Enlarging Lenses, standardized on 39mm Leica mounts. The lenses are available in 50mm f/2.8, 75mm f/4.5, 90mm f/5.6, and 135mm f/5.6 focal lengths.

Once your prints are in hand, there are several new products to help you with the finishing touches. The **3M Company** has developed a faster and easier method for mistake-proof mounting without using heat or electricity. It's the C-35 Positionable Mounting. Adhesive Applicator, to be used with Positionable Mounting Adhesive. A print can be positioned again and again until it's right where you want it. Just lay it on the applicator and crank it through the rubber rollers. You can get more info from 3M Company, 224-45 W. 3M Center, St. Paul, MN 55101.

With the growing interest in hand coloring black-and-white photos, colorists may want to try out **Photocolor's** set of 11 liquid dyes for retouching (prints or transparencies) or hand coloring. The kit lists for \$19.95 and is available from Satter Distributing Co., 4100 Dahlia St., Denver, CO 80207.

Or, if you prefer pencils for coloring and want to try a new technique, **McDonald Photo** has a unique set of retouching pencils and spray. First spray the print to hold the color from the pencils, then color away! The Prismacolor Pencil Set lists for \$17.95 from McDonald Photo Products, 11211 Gemini Lane, Dallas, TX 75229.

So there you have it, a summary of the newest, most convenient products presented at this year's "Show of Shows." ■





## Be a Photographer

Why don't you get in on the prizes and the money and the famous people you'll meet as a photographer?

Maybe you're shy. Maybe you're afraid. Maybe you think you can't hack it. Of course, you think that you are different — and you're right. You *are* different. You have a job you can't leave to study. You really don't have the equipment, you feel, to study photography. Or, you're too old — or too young, or you don't have the money. Or you don't have the time . . .

We've brought 50,000 people to professional photography. Every year we graduate a hundred or more senior citizens who seek a second income for retirement. Every year we graduate close to a hundred teenagers who have barely received their high school diplomas. We graduate women in increasing numbers. We graduate servicemen from Africa and Asia. We graduate doctors of medicine and publishers and even graduate professional photographers who say that they have much to learn from us. Our graduates open several hundred full-time or part-time studios every year, and every year they win top prizes, stage shows, have magnificent photography appearing in leading magazines and newspapers. They graduate because they are different. And we treat each one differently. Each individual student moves at his own speed, at his own time, from his own home. A professional photographer/licensed instructor works with each individual student on each lesson on a one-to-one basis.

Of all the subjects that can be taught by mail, photography best lends itself because the photograph tells all — the professional instructor can see at once how well a student has grasped a lesson. Imagine how much you would like to have the comments and correction of a skilled professional on your lighting, your composition, your glamour, your photojournalism, your

still life and your portraits, when you are tested on how well you have learned, on the basis of your own photography.

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ROGER ROSENFELD

# CIRCLE VISION

Printing in the round requires a different way of seeing from start to finish.  
The reward is a new excitement about your photographs.



*Yosemite National Park*



**Madonna and child**



**Oak tree in fog**



My introduction to seeing circles come when I showed a friend of mine a photograph I was very excited about. The photo was of an oak tree in the fog and the image was quite symmetrical. I had shot it in 2¼-inch format and printed it square. My friend, a graphic artist, suggested that it might look well as a circle, so we cut it out with a pair of scissors. As a circle the picture was a total revelation to me. That experience changed my whole perception of images.

I began printing my old negatives as circles. Some worked; most didn't. When I went out to photograph, I tried to see images as circles, but found it difficult to compose on the square ground glass. To aid my seeing, I very carefully drew a circle with a pencil on my ground glass. This helped immensely.

### **CREATING IN THE ROUND**

I discovered that composing a circular image is very different from composing in a square or rectangular format. My old way of seeing just didn't work. I found when working with circles that I began to break some of the traditional rules of composition. I began to compose many of my pictures in a very symmetrical way. In some cases the main focal point was in dead center. I started to see a relationship between some of my designs and mandalas, abstract geometric designs which take your eye from the outer edges into the

center, where all the elements converge.

Most of the film I was shooting at this time was 2¼-inch square which very naturally related to the circle. As I looked at the square images on my contact sheets, I realized that in most cases the corners were not necessary and really added nothing to the picture. A difficulty, though, was in creating a sense of being grounded, making a solid base in the foreground when some of the bottom was cut away from the square to form the circle. I compensated for this by making strong horizontal lines or U-shaped designs to give the illusion of stability in the circle. The two concepts of symmetry and strong horizontal lines seem to be compatible, but these rules are not written in stone, and variations on these themes are the most interesting to me. Ultimately, a design seems to present itself for most subjects and the issue is resolved on a gut level rather than through any set of rules.

### **MAKING A MASK**

The easiest way to make a circular print in the darkroom is to construct a "mask" with a circular hole in the center and then place the mask over the enlarging paper when you print. My mask is made out of thin block poster board trimmed to match the size of my printing paper. To cut the circle out, I used a professional quality compass with a paddle-shaped blade in it instead of a

pencil. Both the compass and the blades are usually available at art supply stores. The compass must be able to spread at least half the diameter of the circle you want to cut out. Make certain that the blade is placed absolutely straight into the compass or the cut will not be clean; this can be a little tricky, so you might have to cut several pieces of poster board before you get a perfect mask.

Take the poster board to a hard flat surface that you can cut on, for example a piece of "chipboard" from the art supply store. Draw lines diagonally from one corner of the poster board to the other. The point where they intersect is where you place your compass point. Spread the compass open for enough to get the size circle you want. The circle is cut out by rotating the compass around and around until the blade cuts through.

After the mask is prepared, all you need to do to make a circular print is put the mask on top of a sheet of photographic paper in the easel and print as you normally would. Voila! round prints. ■

Ed. note: Should all this be too much trouble, Pace Photographic Products, 2204 Morris Ave., Union, NJ 07083 makes a set of 8x10-inch magnetic printing masks. With them you can print in circles, ovals, or squares. The set of three masks costs \$9.95 and is available from Pace or your local photo store.

Roger Rosenfeld studied photography at New York's School of Visual Arts, the Fashion Institute of Technology, and with Jerry Uelsmann, W. Eugene Smith, and David Vestal.



I am sure you've been told—as I was—about how difficult it is to develop film in the dark, and about all the expensive equipment you need. Well don't you believe it! The key to making beautiful negatives at home is equipment, but it's not the cost that determines how easy the task is. It's "style," and you have lots to choose from when it comes to the most basic equipment... your developing tank and reel.

A developing tank holds both film and chemicals. It's a "darkroom in miniature," light-tight while enabling you to pour liquids in and out through a special opening in the lid. These tanks come in plastic or stainless steel, and there are many sizes and brands to choose from. A recent catalogue of darkroom products lists 29 manufacturers of tanks, and each manufacturer might have several

**"The key to making beautiful negatives at home is equipment, and it's not the cost that determines how easy the task."**

different tanks! Ask your photo store dealer to demonstrate the features of some of them.

Other than the material that the tank is made of (stainless steel or plastic), other factors to be considered are size, inversion possibilities, and darkroom or daylight loading.

The size of the tank you buy will depend on the size of your film—whether 35mm or 2 1/4-inch format—and the number of rolls of film you want to develop at a time. For 35mm, you can choose among tanks which hold one reel, or tanks which hold two

# DARKROOM BASICS

BRUCE POLONSKY

## THE REEL STORY

It's everyone's biggest darkroom hurdle: processing that first roll of black-and-white film.



You can choose from among plastic, metal, or daylight-loading tanks and reels.

to four reels. Obviously, if you have the capability to develop more than one roll at a time, you can save yourself a lot of effort.

Some tanks can be inverted for agitation without the liquid pouring out, while others must be stirred to agitate. Many photographers prefer the results they get by

inversion agitation: a more even development.

All tanks can be used in the light once the film is inside and the top of the tank is on. Daylight loading tanks don't even need to be loaded in darkness, however. Sounds like a boon to photographers, and we'll take a look at what is available

further on.

Inside the tank, film is held on a reel. There are three basic types of reels, and the choice of one of them is really at the heart of the process. One type is a flexible plastic "apron," (the name used by the manufacturers), a coiled strip which feels like thick film. Approximately the same width as the film, the strip has ruffled edges that make it look like lasagna. You uncoil the strip and place your film on top of it. The strip coils up (with your film inside) and it is ready to drop into your tank. The cost of a plastic tank with two plastic aprons, available from Kodak, is about \$8.

Sounds simple enough, doesn't it? While the simplicity is its outstanding feature, there is a price to be paid. The apron type tends to cause uneven development near the edges of the negatives, because developer doesn't flow evenly over the entire negative.

The second type of reel you may consider is a plastic, "self-loading" one, retailing for between \$4 and \$13 for reel and tank. The reel is loaded by inserting the film into two slots on the outer edges of the reel. Then, a simple twisting motion of the two halves of the reel causes the film to move inwards towards the center.

This type is very popular with beginners, because it is easy to load in darkness without a great deal of practice. A principal disadvantage of the "self-loading" plastic reel is that it must be absolutely dry or the film sticks on the way in. And it's not so easy to dry the plastic if you are in a hurry.

The third type of reel is made from stainless steel; the tank which houses it is usually also made of stainless steel. You load the film by pushing it into a clip at the center of the reel, and then manually winding it outward. Prices range from \$9 to \$15 for the tank, and from \$4 to \$7 for the reel.

Many professional photographers swear by the



stainless steel tanks and reels. Some claim that the steel provides for a lifetime of continuous use. That is more or less true of the tank, but reels can be damaged if they are mistreated. The distance between the outside coils of the reel must be exact; if they become bent, even slightly, the film will not wind onto the reel.

Another disadvantage of stainless reels is that they can be difficult to learn to load. Film must be bowed by pressure of the thumb and forefinger, inserted into a clip at the center, and wound away from you with your left hand by turning the reel and guiding the film edge with the right, all in the dark. Uneven winding causes the film to double up, skip grooves, or go on crookedly, resulting in patches of ruined film, since the chemicals cannot fully reach any piece of film that has been mistakenly wound touching another part of the film. Nevertheless, many pros insist that once you get the hang of loading stainless steel reels, they're easier. The secret of this or any system is to practice first. Use scrap film in the daylight to learn how before taking a chance on your all important roll.

Even if you consider yourself to be fumble-fingered, don't despair. There are still other alternatives to get you over the hurdles. You can choose—all these choices may just be the hardest part—between hand loaders to help you get the film onto the reel or a daylight-loading system!

Nikor (available from Rollei of America, Inc., Box 1010, Littleton, CO 80120) makes a handy ramp-like gadget, usable only with stainless steel reels, that bows the film for you and winds it onto the reel when you turn a crank handle. A hand loader with a built-on cassette opener and blade to cut off the film leader costs only \$11.

HP Marketing Corp. (Cedar Grove, NJ 07009) has a whole line of plastic reels and tanks, the Combina,

## AGITATION: CONSISTENCY IS THE KEY!

Once you've got your film on the reel, the reel in the tank, and you've poured in the developer, the most important procedure to remember is agitation. Proper agitation during development assures that fresh developer periodically flows into contact with the film emulsion. Without proper agitation, you may end up with a batch of negatives ruined by problems like streaking, uneven density, or "air bells."

Air bells are small, nearly clear spots where the developer hasn't reached the emulsion due to tiny bubbles of air which stick to the film. To get rid of them before they cause trouble, the instant you've got the developer

poured in and the cap on the tank, rap the tank sharply on the sink or countertop a couple of times.

Next invert the tank (tip it over if it is designed to allow this without spilling) and return it to the upright position repeatedly for the first 30 seconds of development. After the first 30 seconds, use the inversion procedure for 10 seconds out of every minute (or 5 seconds every half-minute for small tanks). For even development, be sure to do this exactly on the minute or half-minute. Rotate the tank one quarter turn with each inversion.

Different tanks may require different methods of agitation, so be sure to read the manufacturer's instructions. Whatever technique you adopt, be sure to use it consistently from roll to roll or your results will vary. ■

## GLOSSARY

**Fixer:** This has nothing to do with traffic tickets. The fixer solution dissolves the undeveloped silver halide crystals within the film emulsion, forming a salt compound that is washed away. Because early fixers had sodium hyposulfite as their main ingredient, fixer solution is also called "hypo."

Today, the major fixer ingredient is usually sodium thiosulfate. This is actually the same chemical as the "hypo" of yesteryear, but with a more scientifically correct name. "Quick" or rapid fixers use ammonium thiosulfate, which can reduce fixing times to 2 minutes or less. It is important to fix films and prints for no longer than the

manufacturer's recommended times, or you may bleach out or stain your negatives. And be sure to use fresh fixer; over-used fixer will leave chemical residues that are almost impossible to wash out.

**Clearing Agent:** After you've developed and fixed your film, it must be washed clean of chemicals. This can take up to 30 minutes and require lots of water unless you use a clearing agent, also called hypo eliminator or hypo neutralizer.

A good clearing agent such as Kodak's Hypo Clearing Agent or Heico's Permawash speeds up removal of the fixer and can reduce washing times to 5 minutes or less. ■

each of which includes an "automatic film loader," another ramp-like gadget. The best feature of the Combina system is its flexibility: you can get tanks that accommodate one to five reels of either 35mm or 2 1/4-inch film, and the loader also comes in either size; apparently it's the only one available for 2 1/4-

inch film. The price of a tank, two reels, and loader is \$14.

Daylight-loading tanks solve the problem of hand-loading film on a reel entirely: you just drop in a film cassette unopened, in a normally illuminated room. Turn a crank and the film loads automatically.

Soligor/Jobo (AIC Photo

**"Many pros insist that once you get the hang of loading stainless steel reels, they're easier."**

Inc., 168 Glen Cove Rd., Carle Place, NY 11514) makes a daylight-loading tank that's made of strong plastic, the kind they make football helmets from; drop it, step on it, and it holds up. Though the reels are plastic, Soligor/Jobo claims you can load them even if they're wet. Just drop a 35mm cartridge in the center of the reel, engage the end of the film on a hook, close it all up, turn the upper section until the film is all loaded, invert the tank and the empty cartridge drops out. The only disadvantage is that just one roll at a time can be processed. The cost of the system? \$34.50.

The Agfa Rondinax daylight-loading tank has, alas, just been discontinued, probably because of its relatively high price (\$43). You may find that some camera stores still have some of these tanks left, however. Brooks/Sigell makes what they call a "portable" developing tank, suitable for processing one 35mm roll of 20 exposures. The tank comes with a dry powder that you use to develop and fix. (This little gem is not easy to obtain; try Porter's Camera Store, Inc., P.O. Box 628, Cedar Falls, IA 50613.)

Now that you know what your options are, all you need to get you on your way to your first roll of magic is a photo thermometer, a clock with a second hand as well as a minute hand, a bottle opener, a pair of scissors, and chemicals. Oh yes, don't forget to take some pictures. ■

Bruce Polansky has been a photographer since childhood; his photography became a way of expressing his other interests: music and nature.



# COLOR IT CIBACHROME

At first I resisted Cibachrome. It seemed too space-age, too flashy.

I thought its intense colors looked "unreal," and its ultra-glossy surface seemed garish. I told myself "I'm a pure photographer.

I've no need for flash and glitter to make my statements."

I put Cibachrome in the same bag with computers and disapproved of both.

I've since come to see that it is not *if*, but *how* technological advances are used that is important. Advances in photography like Cibachrome can be applied to express our inner visions tastefully and effectively, provided we take the strengths—and the weaknesses—of the new materials into account.

For example, the plastic surface of Cibachrome prints that some find so objectionable adds a brilliance, sharpness, and clarity unsurpassed in the photographic world. Often this surface lends intensity and drama to the image. And with so many images around, each competing with the other for the viewers' attention, why shouldn't some of yours be dramatic and spectacular?

Cibachrome, in case you're wondering, is a color slide printing system: a way of making color prints from any type of slide or transparency film. It uses special Cibachrome paper and chemistry. It is a relatively new system first introduced to American photographers in 1974 by Ilford.

Because Cibachrome is a direct positive to positive system, it eliminates the need for an internegative before a print can be made from a color slide. Just pop your slide into the enlarger, expose, and out comes a more or less identical color print. Since Cibachrome is a direct positive system it is not meant to be used for printing negatives, unless of course you want to do some off-beat experimenting.

The sharpness and brilliance of a Cibachrome print is largely due to the unique chemical process that produced it. Cibachrome, unlike conventional color printing papers, uses a silver dye-bleach process to produce its images. The color dyes used are special azo dyes which are much more resistant to fading than other color print dyes.

There are both amateur and professional versions of the Cibachrome process. The professional system is called P-18, and is designed for commercial

**"With so many competing images, why shouldn't some of yours be dramatic and spectacular?"**

lab use only. The amateur version, which I will discuss in this article, is called P-12 and is to be used with Cibachrome Type A printing paper. It has been designed for easy home use and is usually available in most photo stores.

## ALL IN A KIT

Ilford markets a convenient "Discovery Kit" which is specifically designed to introduce you to Cibachrome, and very economically too. It includes all of the materials you'll need to get started printing. The kit includes 20 sheets of 4x5-inch paper, a set of color printing filters, all of the necessary chemicals, a reusable processing drum for 4x5 prints, measuring cups, and an easy-to-follow instruction booklet. It lists for \$26.95. Larger quantities and paper sizes are available (as well as more sophisticated accessories), but these are not necessary at first. In addition to the kit, you will need your own measuring containers and an accurate thermometer. Ilford has published a *Cibachrome Color Print Manual* which has many helpful tips not included in the Discovery Kit instruction booklet.

If you've printed black-and-white, but never color, Cibachrome is a great place to start. Just remember that you must reverse your thinking, so to speak, from your normal black-and-white processing procedures. Because Cibachrome is a positive-to-positive process, if you want an area darker, you must give it *less* light. Conversely,

longer exposure times result in lighter prints.

Since Cibachrome paper is sensitive to any light, you should handle it only in total darkness. Once you've got it in the processing drum, all lights can be on.

A standard black-and-white enlarger can be used for Cibachrome printing if it has a filter drawer between the light source and the lens. Simply insert colored gels (also called "color printing filters") into the filter drawer. A color head with dichroic filters is even easier to use. A 150- or 100-watt enlarging bulb is preferable to the 75-watt type, because it allows shorter exposure times. If you're afraid of bumping into your enlarger—or even not being able to find it—in the total darkness that's required when printing Cibachrome, a roll of glow-in-the-dark tape will solve the problem.

## THE CIBACHROME BALANCE

To begin printing Cibachrome, you will need to determine the filtration or "color balance" for your particular pack of printing paper. Each package will have a manufacturer's recommended "starting filter" combination written on it. This is a suggested combination of printing filters based on the paper emulsion batch and film type you are printing. For example, if you are printing a Kodachrome slide, the back of the paper package under "Kodachrome" will give you the suggested letter-and-number filter combinations.

But this filter pack is Ilford's starting recommendation only. Your particular tastes in color, your enlarging conditions, and the quality of the color of the particular slide you are printing may well require a different filtration.

Therefore, you should make a "color balance" test for each new pack of paper you purchase, to find out what its unique characteristics are. To do this, select a good color test slide from your







portfolio. It should be one which has some flesh tones, a wide range of colors, and a neutral gray. These colors will make it easier for you to judge how closely your test prints match your test slide. One simple method for making color test prints is illustrated in the *Discovery Kit Instruction Booklet*.

Since you will find that your prints look considerably redder when wet, be sure not to judge any of your results until the prints are dry.

Once you have determined the most pleasing color balance for the batch of paper you are using, you are ready to begin printing. As in black-and-white work, you will probably want to make an exposure test strip for each new slide. The key to making good test strips is simple: because Cibachrome has a very wide exposure latitude, your exposure-time-changes must be rather large (10-second intervals, say, or even 15) in order to see any considerable color differences.

After processing your test, judge your exposure by what looks best to you. Because Cibachrome paper is quite contrasty, you may need to burn and dodge a lot. Consider this contrast factor when judging your test exposure. You may find that you have to burn-in your darker shadows until your arms practically fall off—for perhaps as long as ten times your overall exposure. Hot spots or very light areas will wash out if they are not quickly and carefully dodged. This is the greatest difficulty in printing Cibachrome, and it may take you several tries before you are thoroughly familiarized with its printing properties. Keep at it; the more you print, the easier it gets.

## HINTS AND TECHNIQUES

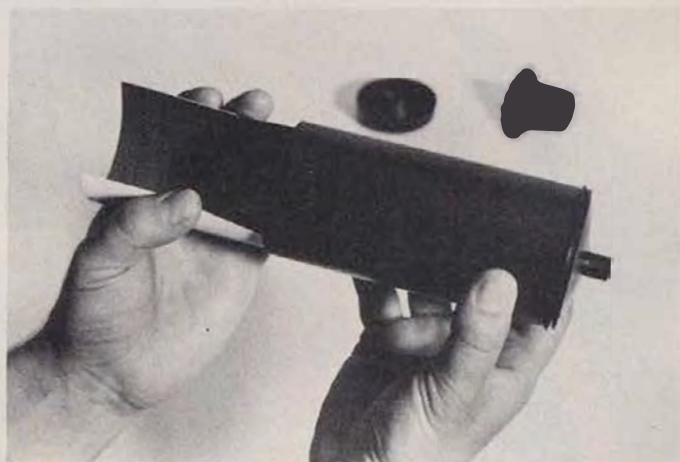
Be sure to follow directions *carefully* when mixing and using Cibachrome chemicals. I strongly recommend a well-ventilated darkroom and the use of gloves when handling the chemicals. Safety glasses are also a good precaution when mixing the bleach, due to its acid content.

Because Cibachrome's recommended 75°F temperature has a leeway of plus or minus 3°F, it is easy to maintain in most home darkrooms. But developing time is critical. Bleach and fixer times must go to completion, i.e. the time stated in the Cibachrome instruction sheet, but can be safely extended beyond the recommended times.

Beginners sometimes have difficulty determining just which side of the plastic-coated Cibachrome sheet is the emulsion side, because it is difficult to judge by feel alone. Ilford's suggested method is the best I've found: before



Photos by Jessica Collett

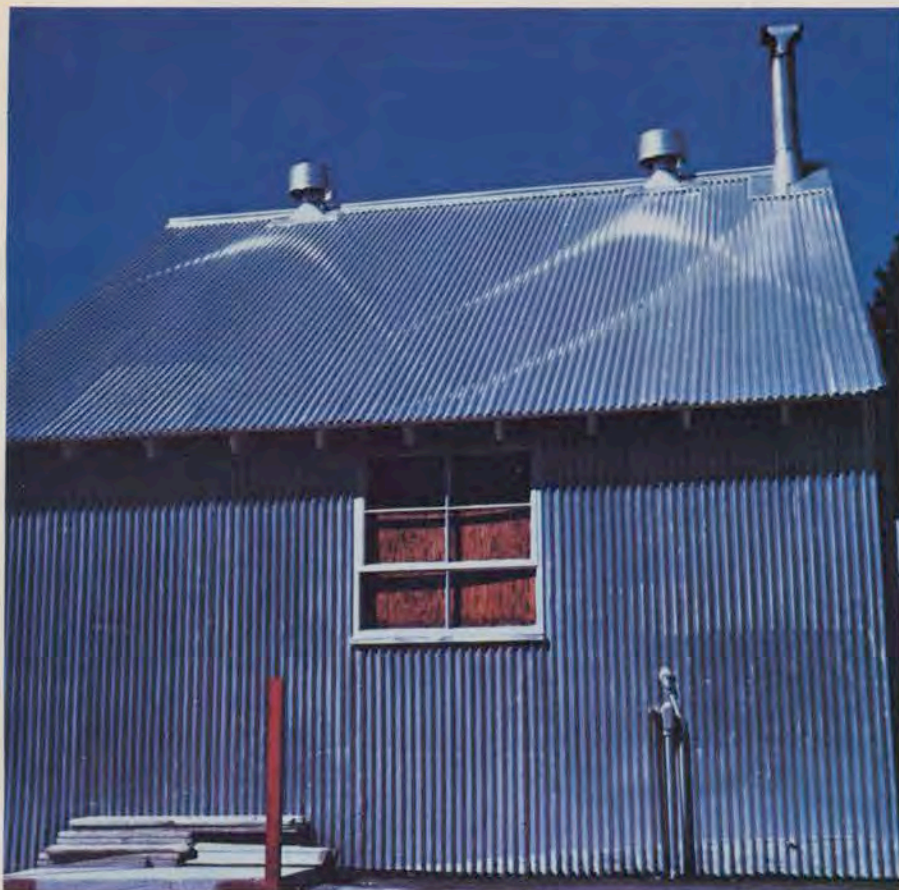


**Loading the Cibachrome drum is easy, but you must insert the paper in total darkness.**

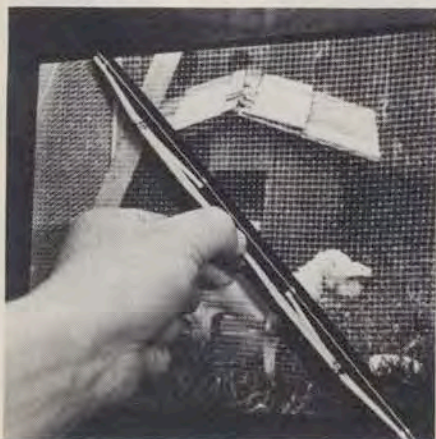




The Cibachrome Discovery Kit is a really easy way to get started in color printing.



To avoid scratching the Cibachrome surface, I squeegee with a wet Volkswagen windshield wiper.



exposure, hold the paper near your ear. Brush your thumb across a corner. You will hear a slight whisper from the back side of the paper and none from the emulsion side. If you accidentally expose the back rather than the emulsion side, your final print will have a reversed image with a dark red to orange cast to it. Remember that you must place the paper in the processing tank with the emulsion side *in*.

Another common problem, especially for beginners, is print streaking. This is caused by using a drum which has moisture in its end caps. Since a drum cap is almost impossible to dry by hand, I recommend using an electric hair dryer and blow-drying it before each use.

After you remove your processed print from the drum, you will need to squeegee it before drying. I have found that many squeegees scratch the surface, but—amazingly enough—a wet Volkswagen windshield wiper works just fine. I then put my prints on screens in a drying cabinet with heat lamps for an hour.

Special care must be taken in handling the print paper. It will tend to pick up fingerprints and scratches more readily than other color print paper. So handle it only by its edges. When loading my drum and when handling my prints after they are dry I often wear soft cotton gloves. Fingerprints are difficult to remove entirely, but can be gently wiped off with the gloves. If necessary, re-wash the print. When storing, stack your Cibachromes face to face or in plastic envelopes to minimize scratching.

### CIBACHROME EYES

Don't be surprised if only a small percentage of your slides turn out to be well-suited for the Cibachrome process. Cibachrome is a high-contrast material, and not all types of slides print well on it. Colorful, softly-lit slides usually print very effectively. Harsh, contrasty slides will print even harsher since dark tones will get darker and light tones will get much lighter. This very harshness, however, can sometimes add the guts and fire an image needs to demand the viewer's attention.

With a little practice, you'll be able to edit your slides with "Cibachrome eyes," quickly spotting those which will benefit most from this printing process. And when shooting pictures, you'll be able to spot scenes and lighting situations that you can turn into dramatic Cibachrome prints. That way, you'll be making Cibachrome's brilliant colors and intense contrast work for you. ■

Jessica Collett is a freelance photographer and a Cibachrome printer at a professional custom lab.





# **TABLE SALT PRINTING ON FABRIC**





Did you know that photographs can be stuffed, stitched, snapped and zipped? Have you ever thought of having snapshots on your bedsheets, erotic pictures on your underwear, or family portraits on your sneakers? There are several processes that make this possible, and perhaps the loveliest is salt printing.

A salt-printed image is finely detailed, has a wonderful tonal scale, and is the color of rich chocolate. The process dates back to the beginning of photography, and was one of the processes used by Henry Fox Talbot in 1833 to make his first images.

The key to the salt process is good old table salt (sodium chloride), preferably the un-iodized variety. The fabric is first bathed in a salt solution, and then coated with a silver nitrate solution. These chemicals react to form silver chloride, which is light-sensitive.

However, the silver chloride emulsion is far less sensitive to light than conventional photo paper, which uses silver bromides. It might take three days to expose the salt-coated material using an enlarger with a standard bulb. Furthermore, a bulb bright enough to do the job quickly would generate enough heat to cook all the gloss in your enlarger and melt the negative too. Therefore, you must print by the contact method rather than by enlarging. So you need a negative the size of your desired image and a powerful light source, like the noon sun.

### MAKING A CONTACT NEGATIVE

The first step in making a salt print is usually to create an enlarged black-and-white negative that can be contact printed. One way is to start with a 35mm negative and enlarge it onto Kodak Professional Direct Duplicating Film SO-015. SO-015 is a finely detailed continuous-tone film. It is called a "direct duplicating film" because it makes a negative directly from the original negative.

To make the large negative, your basic darkroom set-up can be the same as if you were going to print with conventional photo paper. However, use Dektol diluted 1:1 and film fix instead of paper fix. Change your safelight to a Kodak #1A (light red) or its equivalent. Use a black-and-white negative in your enlarger (a color negative cannot be used because of its inherent orange mask, which acts as a thick gray fog over the film and doesn't allow enough light to pass through). Lay a sheet of



**Silver nitrate, sodium thiosulfate, and good ol' kitchen table salt are the supplies you will need to make salt-prints.**

SO-015 film under the enlarger, emulsion side up. You can determine the emulsion side by holding the film vertically with the notch in the upper-right-hand-corner. The emulsion side is now facing you. Put the film in the easel and make a test strip as if you were printing with regular photo paper. Develop the film in the Dektol 1:1 for 2 minutes. The development time can be altered if you need to vary the contrast. Extend the development time if you want negatives with more contrast or shorten the time if you want flatter ones. After development, immerse the film in stop bath for 30 seconds. Fix according to the manufacturer's directions enclosed with the SO-015 film. Examine your test strip, and choose the exposure with the fullest tonal range, then make your final negative. After developing and fixing, wash the negative for 30 minutes, using a wetting agent like Kodak Photo-Flo, and hang to dry.

### PREPARING THE CHEMISTRY

The supplies you will need to coat the fabric are kitchen salt (un-iodized is best, but iodized will do), silver nitrate, which costs about \$15 per ounce and is available from most chemical supply houses listed in the yellow pages, distilled water, and sodium thiosulfate. Sodium thiosulfate (the basic ingredient in fixer) is also available from chemical supply houses and many photo stores. The list price is \$3.50 per pound. You can use almost any fabric, but be sure

to run it through a washing machine cycle to remove any sizing, and then iron it flat. Have at least one dark glass bottle on hand for storing the silver nitrate solution. Some kinds of apple juice come in dark bottles that are ideal for this use.

All the chemical solutions required for this process should be mixed at the outset. To make the silver chloride solution, dissolve 1 teaspoon of salt in 32 ounces of worm water. This solution can be stored in any kind of plastic or glass bottle.

Then carefully make the silver nitrate solution. **Be sure to wear rubber gloves—silver nitrate burns!** It also stains skin, clothing, and is almost impossible to remove. With that in mind, dissolve 1 ounce of silver nitrate in 8 ounces of distilled water (available in many supermarkets and pharmacies). Store this solution in a dark glass bottle.

Mix the third (and final) solution now, even though it will not be used until later. After the fabric has been exposed to light and developed, sodium thiosulfate solution is used to fix the image. Dissolve ½-ounce of sodium thiosulfate in 8 ounces worm water. Store it in any type of glass bottle.

### COATING THE FABRIC

Soak the fabric in the salt solution until it is completely wet; then hang it to dry. Either soak another small piece of fabric at the same time, or plan on cutting a small section off the large piece you're preparing, so you will be able to make a test strip.

After the fabric is dry, mark the back side for later identification. Apply the silver nitrate solution, which looks just like milky water, to the front surface with a paint brush. An airbrush can also be used (it yields a very smooth surface), but it may require more than one coating. Now hang the fabric to dry over a sink or plastic drop cloth, or dry the fabric flat, face up on a drying rack or blotter. *The fabric should be dried in the dark.*

### EXPOSING THE FABRIC

Now that you have a dry, light-sensitive



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*I coat the pre-salted fabric with the silver  
nitrate solution. Note that the liquid is  
clear—like water.*



piece of cloth hanging in the dark wait-  
ing to be exposed, take a flat board or  
piece of Masonite and place on old  
towel over it. Go into the dark place  
where you're storing the coated fabric,  
and lay the fabric on the towel with the  
emulsion side up. Put the negative you  
wish to use on top of the fabric, emul-  
sion to emulsion, and place a 1/4-inch  
thick sheet of bevel-edged glass on top  
of the negative and the fabric—or use  
the wooden type of Premier contact  
printer to hold the fabric and negative  
together. This is the only type of contact  
printer that works well.

Now put a sheet of cardboard on top  
of the entire set-up and carry it all out  
into the sun. Remove the cardboard and  
start the exposure. It should be from 3 to  
20 minutes depending on the density of  
the negative, the time of the day, the  
time of the year, and the latitude of your  
location.

Some testing and patience may be  
needed to determine the proper expo-  
sure time. The best procedure is to  
make test strips and then keep a record  
of each exposure time; this will make  
future salt-printing exposures more ac-  
curate.

After you've exposed the fabric,  
cover the entire set-up and carry it back  
inside. The fabric should now be a  
purplish-brown color.

### DEVELOP IN TAP WATER

After the exposure has been made, de-  
velop the fabric in plain tap water in a  
tray at approximately 68°F. The water



*Simply lay the negative and the coated  
fabric inside of the contact printer, emul-  
sion to emulsion.*

## WHAT TO DO IN THE SNOW

If you live in a climate with a cold or  
rainy winter, you can build a simple  
indoor printing set-up using a sun-  
lamp. The sunlamp should be far  
enough away to give even illumina-  
tion and to keep the sheet of glass  
relatively cool. My set-up suspends  
the light from a stick laid across the  
backs of two chairs. A single light  
works very well for 8x10-inch or  
smaller prints. For 11x14- or 16x20-  
inch prints, I increase the number of  
lights to four and set them up in a  
square formation using two sticks to  
hold them up.

There are a few drawbacks when  
the light source is a sunlamp. For one  
thing, the exposure takes at least  
twice as long as it would outdoors.  
Also, be careful not to sunburn the  
backs of your hands. ■



*Here's one safe and easy method of  
exposing your salt-prints indoors.*

will become cloudy as it precipitates out  
the unexposed silver. Change the water  
several times, until it remains clear. You  
should now have a properly developed  
image. However, if it's a little too dark,  
don't worry; the fixer will bleach it  
slightly. After a thorough washing, the  
fabric should be a reddish-brown color.

Once you have an image of the cor-  
rect density after development, fix the  
fabric in the sodium thiosulfate solution  
for 5 minutes. Wash completely in a troy  
or print washer, but do not use a hypc  
clearing agent, or any kind of detergent.  
I usually wash my prints for about an  
hour, then I hang them up to dry. Iron the  
fabric, if necessary, after it is dry.

The basic salt-printing technique de-  
scribed here can be the starting point for  
you to explore the possibilities of print-  
ing your pictures on fabric. Make a soft  
family album on pillows. Make minia-  
tures, like salt-prints on satin buttons.  
Make a salt print big as a bedspread, or  
put a picture of the sun on your um-  
brella. Play with multiple exposures and  
multiple negatives. The possibilities are  
endless. ■

Susan Shaw is a former color lab manager at San  
Francisco Art Institute and is presently teaching at  
New York City's International Center for Photog-  
raphy.





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# PRODUCT REVIEW

## Watch Your Temperature!

Convert a photo tray into a temperature controlled water bath for film and print processing chemicals with **Atco's Temp 200**. Designed for those who desire consistency in any photo process, color, or black-and-white, the Temp 200 will maintain any temperature from 70°F to 120°F without mixing valves. Installation is accomplished easily via two screws which fasten to the tray; then plug the unit into a standard wall outlet and adjust the dial for the temperature desired. Available from Atco Products, Inc., 189-195 Frelinghuysen Ave., Newark, NJ 07114. List price: \$134.95, plus \$3 postage and handling.



## Inflation-Fighter in a Bag

Do your chemicals flow or do they overflow all over your darkroom counter when you measure them out? Rather than waste time mopping up costly chemicals, why not give **Chem-Sack** a try? Chem-Sack is a plastic, collapsible chemical storage container which comes in its own cardboard box. Place the Chem-Sack on a small shelf over your darkroom counter, and the drip-less dispensing spout will pour chemicals directly into your beaker. After you dispense the chemicals, the bag collapses, forcing unwanted air out—good-bye forever to sluggish, oxygen-damaged chemicals. This container is versatile too—use it for a remote water or chemical reservoir (a 5-foot long accessory hose allows remote storage) or mix your chemicals right inside. Available in both 1 and 5 gallon sizes from Perfected Photo Products, 8420 Sylvia Ave., Northridge, CA 91324. List prices: \$2.25 and \$5.95; hose accessory, \$3.45.

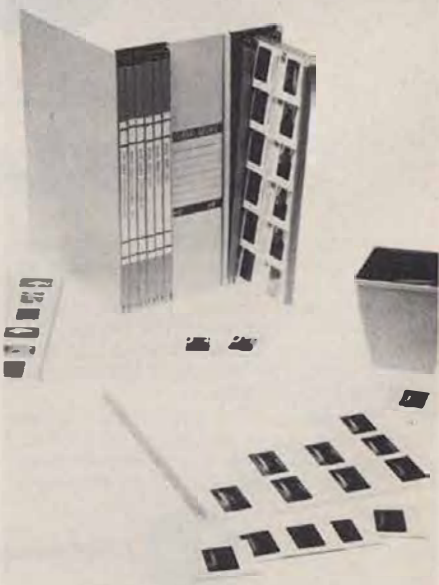
## Safe Slide Storage

Matrix Division/Leedal, Inc., has a safe new way to store your slides—the **Journal System** for 35mm or 2 1/4-inch square slides. Built of acrylic, the Journal Cossette slide holder is designed so that it can be securely closed, providing protection against dirt, dust, and fingerprints. The cassette opens book-style for simple loading or viewing. Each 35mm cassette, 8 1/2 x 11 inches, holds 24 slides; the Journal "12" for 2 1/4-inch square slides, holds 12 2 1/4-inch square slides. Six cassettes fit a Journal Box, and there are storage cabinets available in four sizes to hold the boxes. Available from Matrix Division/Leedal Inc., 1918 South Prairie Ave., Chicago, IL 60616. List prices: 24-slide cassette for 35mm, \$3.60 each; 12-slide cassette for 2 1/4-inch square slides, \$4.20 each; Journal Box with six 24-slide cassettes, \$27 each.



## Wash That Hypo Away

If you're strapped for space, time, or money, check out the **De Hypo Turbulator** for washing your prints. Any standard faucet will accept the Turbulator's adjustable faucet attachment—try it in the kitchen or the bathroom sink. Or how about in the bathtub or laundry tub? The Turbulator has a low drainage point that draws off hypo quickly, and special guards prevent your prints from getting jammed up. Available from A. J. Ganz Co., 115 N. Lo Brea, Hollywood, CA 90036. List Price: \$8.50.





## Fuzzy Memory Stamp

If you sometimes have trouble remembering color print data, Portertown offers an easy way to record vital statistics right on the back of your prints with a handy rubber stamp. The **Portertown stamp** provides spaces to record negative number, date, test print number, paper emulsion number, CC filter correction, and exposure factor. Porter's also sells a special fast-drying ink for RC prints. Now, how can you go wrong? Available from Porter's Camera Store, Box 628, Cedar Falls, IA 50613. List prices: \$13.95 for stamp, \$5.95 for ink, plus shipping and delivery.



## Versatile Squeegee Board

If you've been baffled by how to squeegee prints to get them dry without a lot of fuss, bother, and spots you may find an answer in Pace Photographic's **Multi-Purpose Squeegee Board**. It's a smooth-surface board that you can set up on any flat surface or directly over a darkroom tray for squeegeeing

prints. Adjust the steel base and presto-chango—the translucent board converts into a handy work desk for marking up contact sheets, retouching, or viewing negatives and transparencies. Prints come off easily—just use the finger hole to lift wet prints off the board. If space is a problem, the board folds flat for easy storage. Available from most photo stores or Pace Photographic, 2204 Morris Ave., Union, NJ 07083. List price: \$9.95.



## Stepladder Print Processing

Simplify print processing and save counter space in your darkroom with Richard's **Tray-Raks**. These plastic-coated metal racks, which allow you to stack trays one atop the other, come in two models: No. 1400 holds three 8x10-inch or 11x14-inch trays, and No. 200 accomodates three 16x20-inch or 20x24-inch trays. They are practically indestructible, according to the manufacturer, and fold flat for easy storage. Available from Richard Manufacturing Co., P.O. Box 2910, Van Nuys, CA 91404. List prices: \$16 and \$21.

## Beginners Take Note!

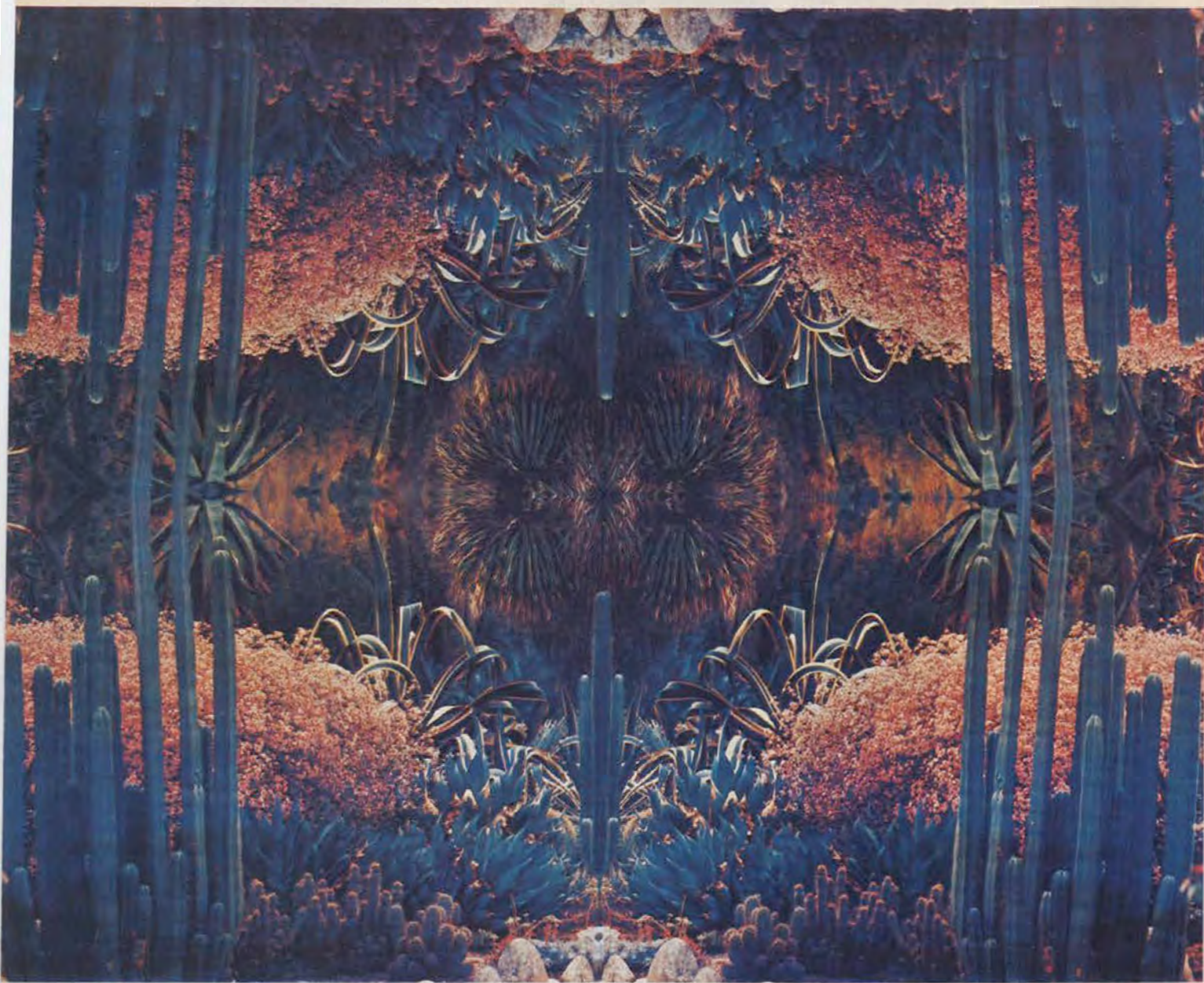
For 40 bucks you can set up a complete darkroom—all you need is a dark closet and the **Deluxe Photo Developing and Enlarging Kit**. It has everything you need to make 25 3½x5-inch prints of your prized black-and-white shots. The kit includes everything but your darkroom sink: a UL-approved enlarger, adjustable film developing tank, three developing trays, assorted chemicals, a graduate, a thermometer, a 7½-watt dark amber safelight, three negative carriers, two masks, two Kodak Tri-Chem Packs, 25 sheets of glossy paper and two film clips—not to mention step-by-step illustrated instructions. The kit is available from Edmund Scientific Co., 7782 Edscorp Bldg., Barrington NJ 08807. List price: \$39.95.



If you need more information on any of these products turn to page 54.



# DARKROOM DISCOVERIES



## JANE GOTTLIEB

The "cactus garden" has rich pinks and greens that were difficult to keep through the last processing steps. I shot the original picture with a Nikon F2 and Nikkor 50mm macro lens at 1/60th of a second at f/11 on Kodachrome 64 film. In order to make my design, I used two normal and two "flopped" 8x10-inch C prints made from a 4x5-inch internegative of the original 35mm slide. Then I made three more internegatives, a total of four. I positioned the four internegatives, two normal and two flopped, butted together, and printed them on Ektacolor Type 74N paper. I processed the paper with pro EP-2 Ektaprint chemicals. The print required retouching with dyes and airbrushing (to eliminate thin black-and-white lines caused by using four separate negatives). From the retouched print, a 4x5-inch copy negative was made, and another Type C print enlarged to 11x14 inches. My "multiple images" reflect my interest in art, color, light, design, and visual expansion.





## GLENN STEINER

*Shooting at a bullfight in Mexico, I wanted to show the feeling and majesty of the matador's death duel. This shot was taken with Kodachrome 25, a Nikon F2, and 500mm Nikkor mirror reflex lens at  $\frac{1}{4}$  of a second. I made an 11x14-inch Cibachrome print with an Omega D2 enlarger.*

*This issue's centerfold poster follows. Simply turn this page, pull open the staples, release the folded-down poster, and re-fasten the staples. ►*





## BOB SNOWMAN

*"I wanted to go a step beyond the typical posterization. This picture began life as a 35mm black-and-white negative. I enlarged it onto Kodalith film, then rephotographed it as a double exposure with color gels over my light source. This is the result."*

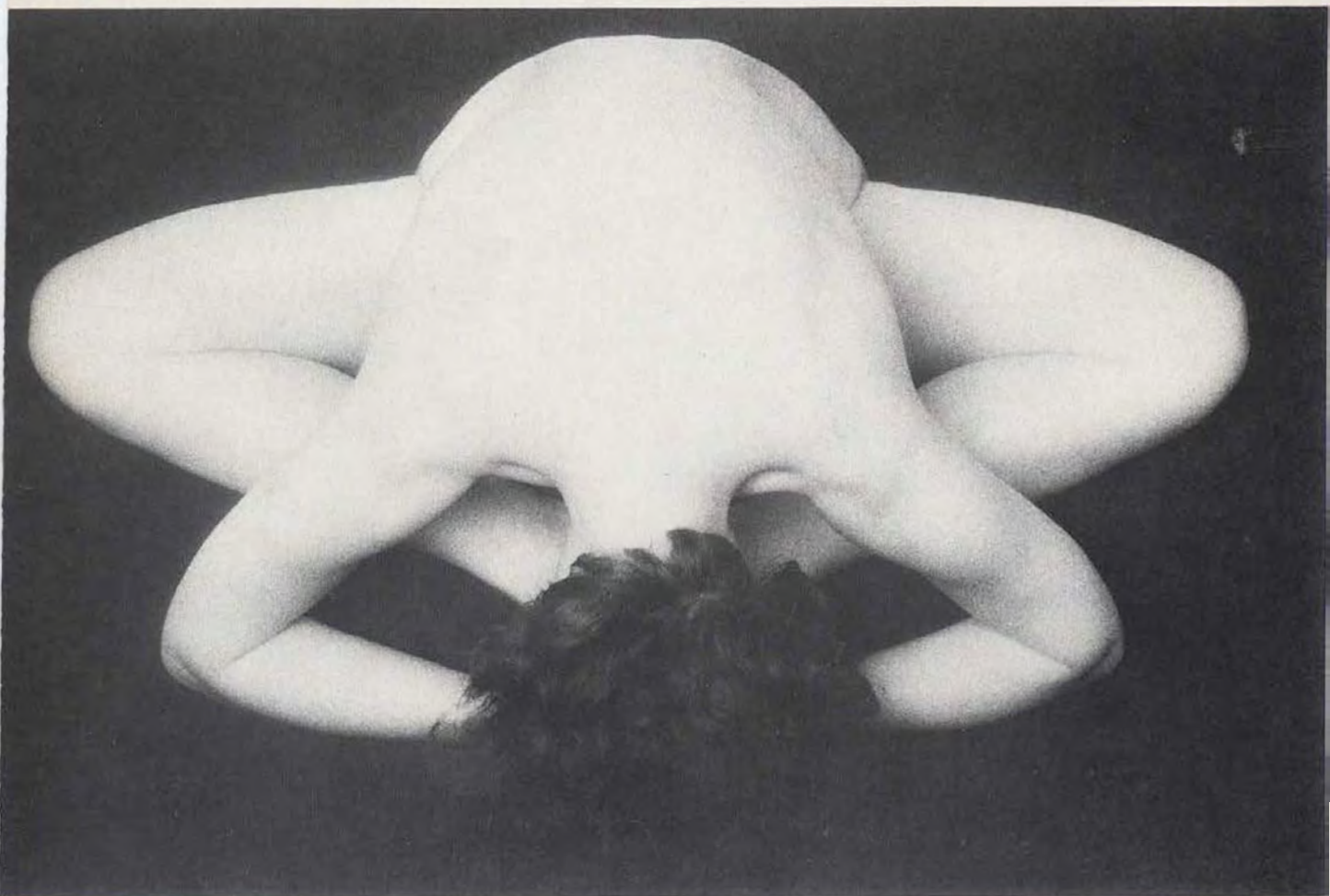






## MICHAEL ROSEN

*"I began photographing nudes because I wanted to try out a technique and needed a suitable subject. I wanted to remove detail so that only form remained. One way I could do this was with black-and-white High Speed Infrared film. This image was taken with a Canon F1 and 100mm macro lens. I used a 25 red filter and could barely see through the lens. The film was developed in HC-110, dilution A, and printed on Ilford's Ilfobrom grade #4 photo paper."*



### **WE WANT TO SHOW OFF THE BEST PHOTOGRAPHS . . . PERHAPS YOURS!**

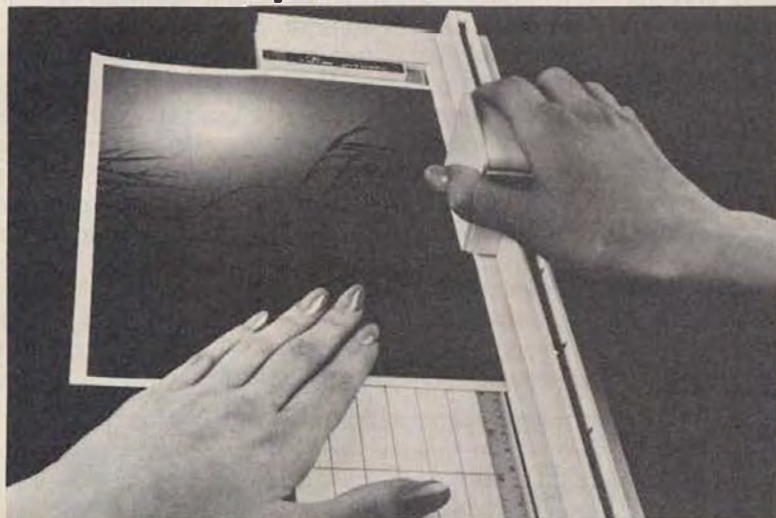
If you would like to see your pictures in the pages of "DARKROOM DISCOVERIES," send us your finest prints or slides. We are especially interested in unique darkroom processes. Here's how to do it:

- 1.** Prints must be unmounted and no larger than 11x14 inches; 8x10-inch prints are preferred. Your name and address must be on the back of each picture, and they should be well-packaged with cardboard protectors.
- 2.** Send no more than 20 color transparencies. Your name should be on each one.
- 3.** A self-addressed envelope with enough postage for return mailing plus insurance must be sent with your photographs to insure return. DARKROOM PHOTOGRAPHY assumes no responsibility for return or safety of photographs although we will do all possible to protect and return them.
- 4.** Please do not send photographs that have been published in or are currently submitted to other national magazines.
- 5.** We will pay \$50 for each photograph we publish.



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# DAMN THE COMPROMISES... MAKE THE BEST PRINTS IN THE WORLD.

Until recently you had to compromise with an enlarger if you wanted to do both black and white and color printing. Why? Consider two facts of life.

1. Most enlargers were designed for black and white printing. When amateur color printing came along, manufacturers added a filter drawer to their conventional condenser enlargers to accommodate color printing. But this compromise didn't satisfy the photographers who were mainly interested in making color prints.

2. In an attempt to simplify color printing, integrating diffusion heads with built-in filters were devised, but they require the removal of condensers. Without condensers, black and white print quality suffers. And color

printing times may be quite long, allowing excessive heat build up at the negative and leaving print quality at the mercy of transient vibrations.

All of the above was very much in mind during the development of the Vivitar VI™ enlarger. It was designed from the beginning to eliminate the necessity for compromises in both black and white and color printing. Of course it's a condenser enlarger, because any experienced darkroom man knows condensers make sharper prints.

The Vivitar VI is a big, rigid, no-nonsense enlarger that handles like pro-lab equipment. The head glides up and down the girder-like box beam column on ball bearing rollers. Constant force counter-balance

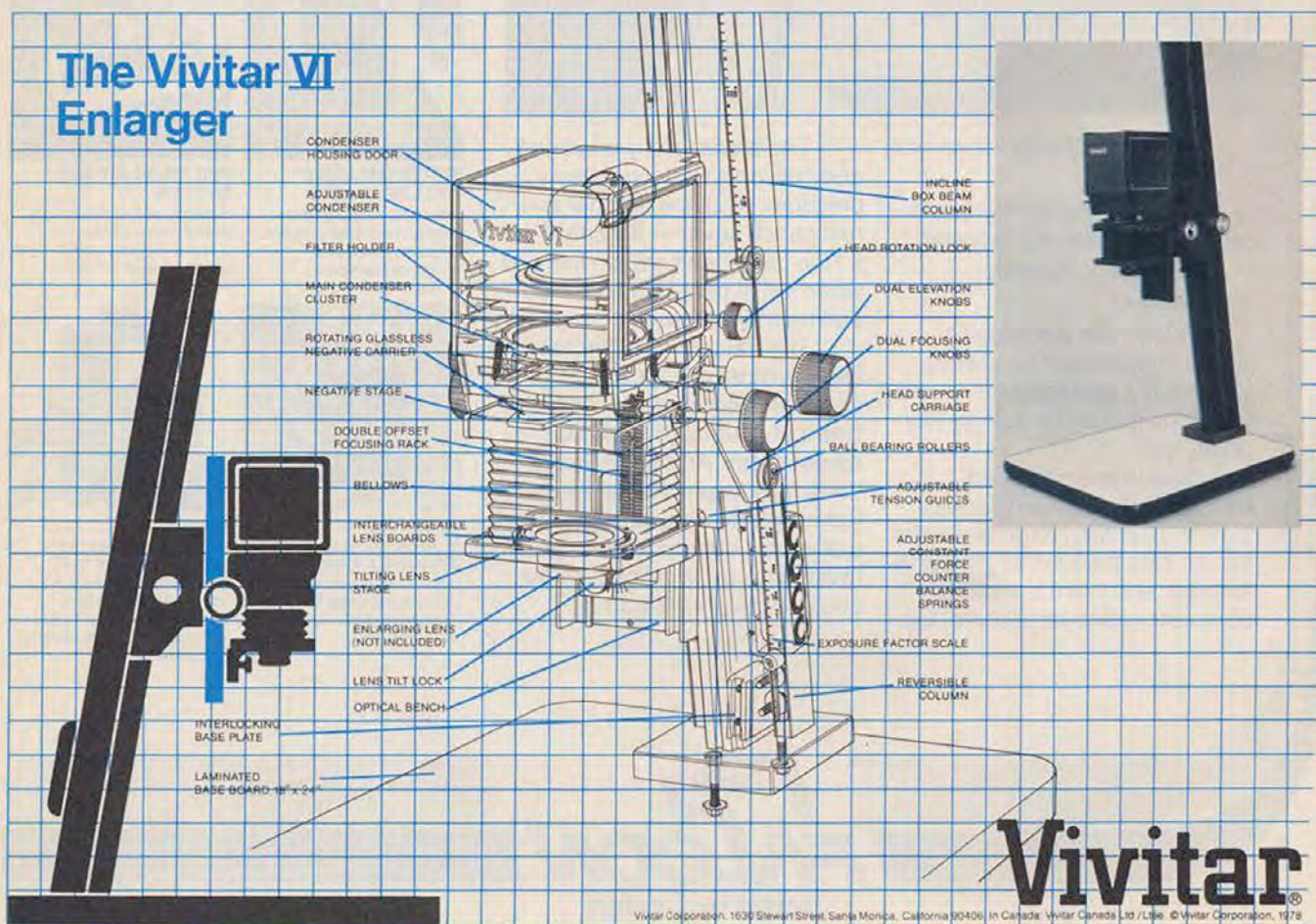
springs equalize inertia at all points on the column. There's no slippage, no backlash. Southpaws will appreciate the ambidextrous design... it has both right and left hand focusing and elevation controls. All the optical components are aligned on a heavy column of their own, like a vertical optical bench. The XL column is standard as is the oversized baseboard which allows 16" x 20" prints from 35mm format, two features considered optional extras on some enlargers.

The Vivitar VI will satisfy the most exacting black and white printers including compulsive dodgers and burners and zone system perfectionists. If the bulk of your work is black and white but you occasionally try your hand at color, you can

use an inexpensive color filter pack and get the crisp, saturated color prints only a condenser enlarger can produce. If you find yourself working more with color, you'll want Vivitar's Dioptic™ Light Source. Unique technology makes it the most sophisticated color head you can buy... it's no exaggeration to call it the color head of the future. Check it out for yourself at your Vivitar dealer.

But remember that the Dioptic Light Source can be used only with the Vivitar VI enlarger, so make sure you buy the only enlarger that can grow from a perfectionist's black and white model to an equally high-quality color unit.

Black and White *and* color, damn the compromises. Full speed ahead.





# ANNUAL TIMER BUYING GUIDE

In our March/April issue, we presented Part 1 of our Annual Timer Buying Guide, which listed timers designed for *enlarging only*. This issue we're going to wrap up our buying guide by covering the remaining three types of timers: those designed to time darkroom pro-

cessing steps, those designed to time both processing steps and enlarging exposures, and finally, the smallest and newest category, enlarging timers which can compute exposure times. The tables which follow include all the features and specs you need to know to

make an informed, economical choice from among the many timing options which are available. Together with the timer table presented in the March/April issue, they provide a complete round-up of what's available in darkroom timers today.



GraLab 171

Omega  
Program TimerTime-O-Lite  
S-72Vivitar Process  
Time Commander

## Processing Timers

Name Manufacturer Distributor	Type of Construction	Timing Range	Smallest Marked Interval	Can be Pro- grammed for More than One step	Special Features List Price
<b>GraLab 171</b> Dimco-Gray Co., 8200 S. Suburban Rd., Centerville, OH 45459	electromechanical	1 sec.-60 min.	1 sec.	No	Two separate outlet receptacles for automatic switching; buzzer alarm with variable loudness control. <b>\$52.95</b>
<b>Leedal 207</b> Leedal, Inc., 2929 S. Halsted, Chicago, IL 60608	electromechanical/ luminous dial	15 sec.-8 min.	15 sec.	No	Built-in buzzer; pointer can be reset during timing cycle. <b>\$36.00</b>
<b>Omega Program Timer</b> Omega Div., Berkey Marketing Cos. Inc., 25-20 Brooklyn-Queens Expwy. W. Woodside, NY 11377	electromechanical with program- mable disks	15 sec.-29 min. 30 sec.	15 sec.	Yes	Interchangeable time-programming disks; at end of each programmed step, timer turns off electrical accessory (if one is connected) and sounds bell; next step starts when you push Activator Bar. <b>\$59.95</b>
<b>Time-O-Lite S-72</b> Industrial Timer Corp. U.S. Hwy. 287, Parsippany, NJ 07054	electromechanical/ luminous dial	1 min.-60 min.	1 min.	No	Built-in buzzer; load receptacle for remote signalling device; interval indicator points to original time selected during timing cycle. <b>\$49.95</b>
<b>Time-O-Lite SR-59</b>	electromechanical/ luminous dial	15 sec.-15 min.	15 sec.	No	Auto reset; built-in buzzer; two pilot lights indicate when unit is timing and when it has completed the time cycle; also available in models timing to 30 min. in 30-sec. intervals, and 60 min. in 1-min. intervals. <b>\$59.95</b>
<b>Unicolor Jingle Bell Program Timer</b> Unicolor/Div. Photo Systems Inc., 7200 Huron River Dr., Dexter, MI 48130	mechanical	30 sec.-30 min.	30 sec.	Yes	Interchangeable time-programming disks; at end of each programmed step, timer sounds bell; next step starts when you press Activator Bar. <b>\$28.00</b>
<b>Vivitar Process Time Commander</b> Vivitar Corp., 1630 Stewart St., Santa Monica, CA 90406	solid-state with digital readout	1 sec.-59 min. 59 sec.	1 sec.	Yes	Memory holds up to 18 steps, either consecutively or in three programs; Auto and Manual modes; on Auto, unit counts through all steps in program consecutively, with optional, audible "drain time" signals; temperature probe accessory available. <b>\$99.95</b>



# ANNUAL TIMER BUYING GUIDE: PART 2

## Enlarging/Processing Timers

Name Manufacturer/ Distributor	Type of Construction
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**Creative Phototronics Timer**  
CP Labs,  
370 Bernardo Ave.,  
Mountain View, CA 94043

solid-state  
with digital  
display

**Gralab 300**  
Dimco-Gray Co.,  
8200 S. Suburban Rd.,  
Centerville, OH 45459

electromechanical/  
luminous  
dial

**Gralab 500**

solid-state  
with digital  
display

**Kearsarge 402**  
Kearsarge Industries Inc.,  
1890 Michael Faraday Dr.,  
Reston, VA 22090

solid-state  
with digital  
display

**Kearsarge 502**

solid-state  
with digital  
display

**Leitz Focotimer**  
E. Leitz, Inc.,  
Link Drive,  
Rockleigh, NJ 07647

solid-state  
with digital  
display

**Omega Pro Lab**  
Omega Div., Berkey Marketing Cos., Inc.,  
25-20 Brooklyn-Queens Expwy. W.,  
Woodside, NY 11377

electromechanical/  
luminous  
dial

**Phototronic Mark I**  
Standard Electric Time Corp.,  
89 Logan St.,  
Springfield, MA 01101

solid-state  
with digital  
display

**Time-O-Life EZC-73**  
Industrial Timer Corp.,  
U.S. Hwy. 287,  
Parsippany, NJ 07054

electromechanical/  
luminous  
dial

**Unicolor Bigger Ben**  
Unicolor/Div. Photo Systems, Inc.  
7200 Huron River Dr.,  
Dexter, MI 48130

electromechanical/  
luminous  
dial

NOTE: All timers show "Time Remaining" during timing cycle.

## Exposure - Computing Timers

Name Manufacturer/ Distributor	Type of Construction
--------------------------------------	-------------------------

**Leitz Focometer**  
E. Leitz, Inc.,  
Link Drive,  
Rockleigh, NJ 07647

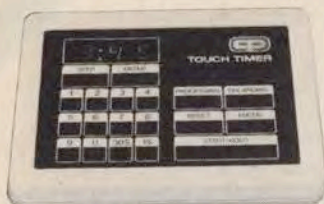
solid-state with  
digital display

**Omega CS-25**  
Omega Div., Berkey Marketing Cos., Inc.,  
25-20 Brooklyn-Queens Expwy. W.,  
Woodside, NY 11377

solid-state

**Omega CS-50**

solid-state



Creative Phototronics Timer



Gralab 500



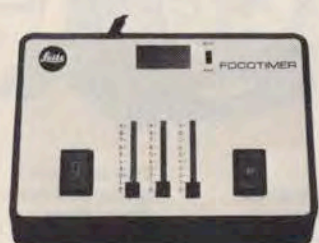
Kearsarge 402



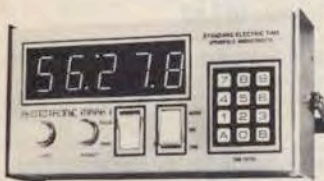
Kearsarge 502



Omega Pro Lab



Leitz Focotimer



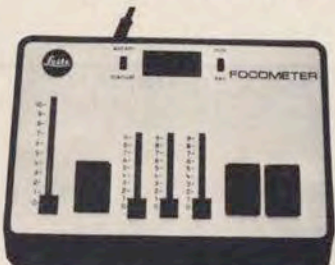
Phototronic Mark I



Time-O-Life EZC-73



Unicolor Bigger Ben



Leitz Focometer



Omega CS-25



Omega CS-50



Timing Range	Smallest Marked Interval	Auto Reset?	Accepts Accessory Footswitch?	Special Features List Price
0.1 sec.-99.9 sec. enlarging; 1 sec.-9 min. 59 sec. processing	0.1 sec. from 0.1-99.9 sec. 1 sec. from 1 sec.-9 min. 59 sec.	Yes	No	Eleven-step memory with continuous countdown; "Hold" and "Reset" buttons; once-per-second "metronome" available; 30-sec. tones for film processing and graduated end-of-step tones available in processing mode. <b>\$89.95</b>
1 sec.-60 min.	1 sec.	No	No	Buzzer with adjustable volume control; 8"-diameter luminous dial. <b>\$54.95</b>
0.1 sec.-99 min. 59.9 sec.	0.1 sec.	Yes	Yes	HiLo brightness control of digital display; "Hold" button; buzzer with on/off control. <b>\$124.95</b>
0.1 sec.-99 min. 59.9 sec.	0.1 sec.	Yes	Yes	Memory can store four different times; digital display automatically adjusts to darkroom light level; "Hold" and "Cancel" buttons; 1-second audio cues available, also 30-sec. cues for film agitation. <b>\$229.95</b>
0.1 sec.-99 min. 59.9 sec.	0.1 sec.	Yes	Yes	Same features as Model 402, plus two independent AC outlet systems; timer counts either up or down and indicates overrun time in either mode. <b>\$289.95</b>
0.1 sec.-9.99 min.	0.1 sec. from 0.1-99.9 sec. 0.01 min. from 0.01-9.99 min.	Yes	Yes	Internal voltage regulation; during countdown a new time may be programmed; min. sec. changeover switch; in "minutes" mode, buzzer sounds 7 sec. before end of timing period; pressing time key during countdown turns enlarger off and reprograms original time. <b>\$366.00</b>
1 sec.-60 min.	1 sec.	No	No	Buzzer with adjustable volume control; audible "tick" each second (with on/off switch); 8½" luminous dial. <b>\$59.95</b>
0.1 sec.-99 min. 59.9 sec.	0.1 sec.	Yes	Yes	Audible, once-per-second countdown "beep" with on/off switch; waterproof keyboard; brightness of digital display adjustable; "Hold" button. <b>\$89.50</b>
1 sec.-59 min. 59 sec.	1 sec.	No	No	Buzzer with on/off control; provision for remote buzzer; 7"-diameter luminous dial. <b>\$46.95</b>
1 sec.-60 min.	1 sec.	No	No	Accepts program disk for sequential timing in 30-second increments up to one hour for the total process; when using program disk, timer gives audible signal at end of each step and then shuts off; hands can rotate clockwise to directly measure elapsed time; gives either continuous tone or short beep at end of each timing event. <b>\$100.00</b>

Timing Range	Smallest Marked Interval	"Time Remaining" Available During Timing Cycle?	Accepts Accessory Footswitch?	Special Features List Price
0.1 sec.-9.99 min.	0.1 sec. from 0.1-9.99 sec. 1.01 min. from 0.01-9.99 min.	Yes	Yes	Spot or full-area exposure readings; required time automatically displayed and stored; auto or manual operation; "Reset" button; during countdown, a new time can be entered on the sliding controls. <b>\$772.00</b>
2 sec.-75 sec. manual 2 sec.-100 sec. auto	1 sec.	No	No	On auto, light sensor takes full-area ("integrated") readings of light reflected from print during exposure; can handle up to 75W halogen or 150W tungsten enlarger bulbs. <b>\$189.95</b>
1 sec.-180 sec. manual 0.1 sec.-180 sec. auto	3 sec.	No	No	Spot-reading light sensor probe; memory circuit lets you make repeat prints without taking repeat exposure readings; can handle up to 250W enlarger bulb. <b>\$224.95</b>



# STRIPPING FOR THE STARS

Photographer Norman Seeff, is well known for his "encounters" with music and film stars, most of which end up on record jackets, publicity stills, and the like. Seeff clicks the camera's shutter, but his assistant, Keith Williamson, actually prepares the prints.

Because we are as much intrigued by "the man in the dark" as the person under the lights, we visited Williamson in his darkroom at Seeff's studio in Hollywood, California.

**DP:** You were one of the team nominated for a Grammy for your work on Joni Mitchell's "Hejira" album cover. What other celebrities have you done record album shots for?

**KW:** We did both "Hejira" and Joni's "Don Juan's Reckless Daughter." We've done Mathis and Tomlin and Carly Simon and groups like Santana and Wet Willie and . . . the list gets very long. All together, I guess Norman and I have done nearly 500 album covers.

**DP:** Will you describe the relationship between Norman's taking the picture and your making the print?

**KW:** It's a joint effort from start to finish. I'm there during the sessions. Norman wants to experience the moment and record it. He doesn't want to get bogged down in the mechanics of the cameras and lights. I'm the one who makes sure that everything technical goes well, that exposures are correct.

**DP:** What proportion of your work is in the darkroom, and what proportion of that work is for Seeff?

**KW:** The darkroom is about 75 percent of my work, and about 50 percent of that is Norman's. I do all of Norman's work, and some for other photographers and some of my own. I work as an assistant for other photographers sometimes. I get much less money for that than I can make in the darkroom, but I get to sit at ringside for a Muham-



med Ali fight or on the field at a Superbowl game when I work with Neil Liefer. I went with him to photograph Mark Spitz in the pool. Neil is a little overweight, and when we were doing the underwater sequence to show Spitz's strokes, Neil kept bobbing up to the surface, so I went under with the motor-driven underwater housing and did the shots. I didn't get paid very much, but I enjoy learning how it's done. And I can make up for the low pay when I do "stripping."

**DP:** Stripping!?

**KW:** Yeah, stripping in the darkroom. I made \$2,000 for one job. CBS records wanted 12 separate images of a singer on a single album cover. Now you don't get quite the same effect from pasting up 12 prints on one sheet and rephoto-

graphing them as you do if you print all 12 images on one sheet of paper ("strip" the images in) to begin with, so that there's practically no retouching. Stripping is one of the things people use me most for.

**DP:** What's the hardest part of stripping?

**KW:** You have to time how long a print takes to come up to perfection, and match all the other prints and times to it, yet keep the contrast perfect.

I'll give you an example. For the CBS record "The Jones Sisters," designer Ed Lee chose a shot with all three women captured at a very expressive moment. But as you know, a square album cover is not the same proportions as a 35mm negative. Lee cut the print, moving one of the women who was off to the right into the center of the frame so that it could fit the album cover format. He sent me a photostat of the new image and asked me to strip the two halves together. By masking first one half and then the other I could print both parts on one sheet of paper without the space between.

**DP:** You started out, I've heard, to become a doctor. What got you interested in photography?

**KW:** I was in my third year at New York University taking some heavy

**A sampler of album covers printed and stripped by Keith Williamson.**



JONI MITCHELL HEJIRA





pre-med courses: calculus and German and inorganic chemistry, and I had really had it. I wanted to get out there and do something enjoyable.

About that time I found an old Contax camera in Washington Square Park. I literally stepped on it. I picked it up, and said to the person I was standing next to, "I think I've just stepped on your camera," and he said, "No, it's not mine," and the person on the other side said it wasn't his. I waited there for an hour and a half with the camera around my neck so that it could be seen, and no one came to claim it. So I took it to the police station and turned it in. They said if no one claimed the camera in six months, it was mine.

I waited the whole six months to the day. I went to the police station with a roll of film in my hand and asked if the camera had been claimed. They said no, but you have about another half hour to wait before the six months are up. I waited. Then I put the roll of film in and that started it. I soon dropped out of pre-med.

**DP:** That's an incredible story. Where did you go from there?

**KW:** I transferred to Rochester Institute of Technology School of Photography. I was there a week and had to leave because I had no money. I went to New York and got a job at *Life* magazine as a mail clerk. I wrote to the head of the photo department and said I wanted to be a photographer's assistant. Eventually they gave me that job. My ambition was to become a *Life* staff photographer, but the magazine folded, and I got laid off.

There was nothing to keep me in the East, so I packed up and came West. Within a couple of months, a friend told me that someone at United Artists needed a photographer. I showed my portfolio—all scenics, no people, not one face in the whole thing. He said the printing was superb, but the portfolio "really can't do much out here. This is L.A." But he wanted me to print for him. There wasn't enough to make a living, but he told me Norman Seeff was looking for a printer. We met; he liked the way I printed and started giving me work.

**DP:** How long have you been working with him?

**KW:** Four years this month.

**DP:** How would you describe your style? Do you have different styles when you shoot and when you print?

**KW:** Before I came to L.A., most of my work was of subjects that you didn't have to take your proof sheets back to and say, "Hey, how do you like what I did with you?" Nobody could say they didn't really like it because there weren't any people in the pictures to

begin with. Working with people, especially celebrities, is different. You're subjected to how they feel about your work.

This was something I had to confront. Norman helped me. He told me that if you're afraid or worried about getting great pictures, allow that to show in your pictures. Be a little uncomfortable and let your subject be a little uncomfortable. Go through that, and then you'll get to the things that you really want. You'll loosen up.

I guess that carries over to the way I print. I rarely have to do a print over. People are often surprised, but I have about a 99 percent record of getting it on the first shot. I don't do tests, and I

**"What kind of a teacher tells a student that there is a wrong way or a right way to do something? If you're getting what you want, how can it be wrong?"**

don't have a garbage can in the darkroom.

**DP:** I see that you don't. But as fast as you are, you still must spend a lot of time in the darkroom. Do you ever get lonely in here?

**KW:** Yes, sometimes. If I get real lonely, I have an intercom here and another one out there in the studio office hidden under the desk so I can listen in on conversations. But I'm not always alone in here—the darkroom has become a place to hang out. People come in and watch me work. I love the company, and I like to show off. Oooohs and aaahs when the print comes out. Magic. It is magic to a lot of people, and it is to me or I wouldn't be into it.

**DP:** What have you learned recently that makes your work easier?

**KW:** I've learned to relax a lot more. I've learned to know that I will be able to get just the effect I want. And I've learned to let my eyes adjust before I start printing. I used to see the guys at *Life* wearing dark glasses when they came out of the darkroom and went outside for lunch. I thought they were showing off, but I know why now. Also, I've learned to let the negative heat up and "pop" before I print.

**DP:** Pop?

**KW:** I call it "popping." You focus the negative, but by the time you put the paper in the easel, the negative has popped and the print will be out of focus. The heat of the enlarger causes it. I used to have a lot of waste that way. I couldn't figure out what was wrong. Now I keep the enlarger on almost all the time and let the negative heat up before I focus.

Another thing I do is to always adjust the f-stop on the enlarger lens rather than change my exposure time. I do a 40-second exposure on almost every 16x20-inch print. I know that 40-second exposure so well that I can pace myself as to what areas to hold back with the dodger.

**DP:** Is that a nylon stocking under the lens?

**KW:** Yes, it's my diffuser. It's not panty hose because the mesh would be too coarse. It has to be a real fine pair. A very nude, natural, fleshtone color is best. Some people use it double or triple, but I only use one thickness. A photography student who visited the other day said that his photo teacher had the nerve to tell him that diffusing in the enlarger rather than in the camera is the wrong thing to do. What kind of a teacher is that to tell a student that there is a wrong way or a right way to do something? If you're getting what you want, how can it be wrong?

**DP:** As I watch you print, I see you blocking the light from the enlarger with your head! Why?

**KW:** Because I'm usually holding things with both hands, like holding down the top of the contact printer to keep the negs flat. I watch the timer, and look at the negatives, and I can see that this strip needs about 7 seconds. When the timer reaches that point I'll stop the exposure by using my head to block the light. Someone said that's why my hair is blond in the back.

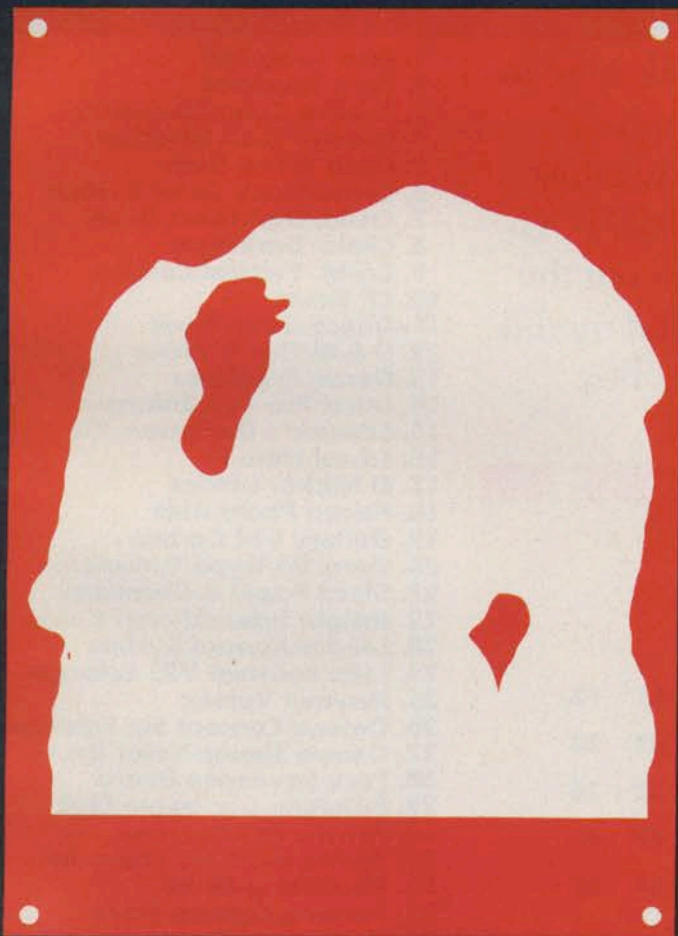
**DP:** Tell me your procedure for developing film.

**KW:** It's very simple. I use Nikor tanks, and process about six rolls at a time. I use D-76 diluted 1:1 for almost all film. Sometimes I rinse between the stop and the fix to prolong the life of the fix. I don't use a hypo eliminator. I just use the Wat-Air film washer, which is terrific. I dry film by hanging it outside the darkroom and I never have dust problems.

People are often shocked at the way I handle negatives too. But I can go back to negatives that are years old, like the Carly Simon "Playing Possum" cover; there are lots of scratches, but I still get exhibition quality prints out of them. The nose grease trick. With your fingers, rub some oil from the bridge of your nose on the negatives. Smooths the



Here are illustrations of some of the steps Williamson used to assemble Joni Mitchell's Hejira cover from several different negatives. First, a shot of the singer was printed with an orange amberlith mask over the enlarging paper; this specially-cut mask blocked out most of the detail in her coat. Next, some of the detail along the edges of the coat was carefully printed in to facilitate blending with the other images. Then the remaining images were printed in, each with its own amberlith mask. To show the sequence of steps,



we have reproduced the constituent images separately, but when Williamson made the final print, he printed all the images on a single piece of paper. To assure precise placement of the various components, Williamson sketches on one piece of paper under the enlarger a map of the final placement of each of the separate images. A hole-punch registration system guarantees that the various masks and sheets of paper will be properly aligned.



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37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60

Please circle your interest in darkroom work.

A. Professional B. Educational C. Student D. Hobbyist

Do you plan to purchase darkroom equipment in the next 6 months?

E. Yes F. No

Do you plan to purchase a 35mm camera or lens in the next 6 months?

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41. Unicolor Color Slide Kit
42. Van Nostrand Reinhold Pub.
43. Vivitar VI Enlarger
44. Vivitar 356 Enlarger
45. Yankee Film Dryer
46. Yankee Film Tanks



scratches away.

**DP:** You blow up to 16x20, yet you use 35mm format. Why not a larger format?

**KW:** There's no camera we can work with as spontaneously as the 35mm. Everything is motor driven, and it's just "click, click, click." In just a moment, we'll take several shots. That really loosens someone up.

**DP:** What's the most memorable session you've done?

**KW:** They all have terrific moments. Joni Mitchell for "Don Juan's Reckless Daughter" was quite something. She came out in black face, with a wig and a hat and no one knew it was Joni Mitchell. People were shocked. We didn't know who this black person was.

This last album is very different from anything she's ever done before—lots of rhythms, drums, percussion, and activity. She's a great dancer and she loves to dance. She took off the hat and then the wig and the jacket and got into the dancing. The music got louder and louder and everybody was going crazy.

Then there's the other side. We'll do Lily Tomlin and play Chopin. She'll go into a dream state and move around and we'll get lovely pictures.

**DP:** How do you relate to the person being photographed?

**KW:** I provide a little spice. I have a lot of humor and relate well to almost anybody. I make them feel comfortable and let them know that it's okay that all these people are watching them.

**DP:** Are all your shooting sessions for record jackets?

**KW:** No, we've just done Sylvester Stallone and Lily Tomlin for features in what used to be *Crawdaddy* magazine, now *Feature*. And we just finished an eight page spread for the new *Life* magazine on the young movie moguls.

**DP:** Some of that was your work and some was Norman's. How do you deal with the fact that Norman has had so much publicity and you're the man in the dark?

**KW:** He's good about sharing credits and responsibilities for things. I love Norman a lot. He's been like a guru to me, and I don't mind at all being a step behind him or wherever I am. It's a very healthy and rewarding relationship.

**DP:** What do you think he'd say about you?

**KW:** Why not ask him.

**DP:** Yes, I will. (Seeff joins us in the darkroom.) Norman, what do you appreciate most about Keith?

**NS:** He's got a great sense of humor. He's extraordinarily organized. He gets into that darkroom and knocks out prints of incredible quality in minutes. He has both the technical ability and the artist's eye. He's quite impressive in the darkroom, very quick and deft. And



Using relatively simple stripping techniques, Williamson succeeded in "compressing" *The Jones Girls* to fit on their album cover.

he's a good photographer, very special.

**DP:** Keith, since you are shooting more and more of your own work, can you envision a time when you would not do any printing?

**KW:** No. I have a darkroom at home and I sometimes relax by doing a print of my kids or my wife. I'm sure I'll always print.

**DP:** What do you see ahead for you?

**KW:** I'd love to teach. I think I have some stuff to teach people. I do some lectures around town at colleges, and we invite anyone to our sessions and to the darkroom to watch me work. They can ask as many questions as they want.

**DP:** Do you think you'd ever like to live anywhere else?

**KW:** I don't know how I could. An astrologer once told me I'd be better off near San Diego. I don't know how I could be any better off... anywhere.

**DP:** What a nice way to feel!

**KW:** The things that have happened to me in my personal and business life are incredible. I've doubled my income every year. I have two great kids and the best possible woman in the world. We have everything we want. Only deadlines give me indigestion... and not getting home for dinner. ■

## visual aids

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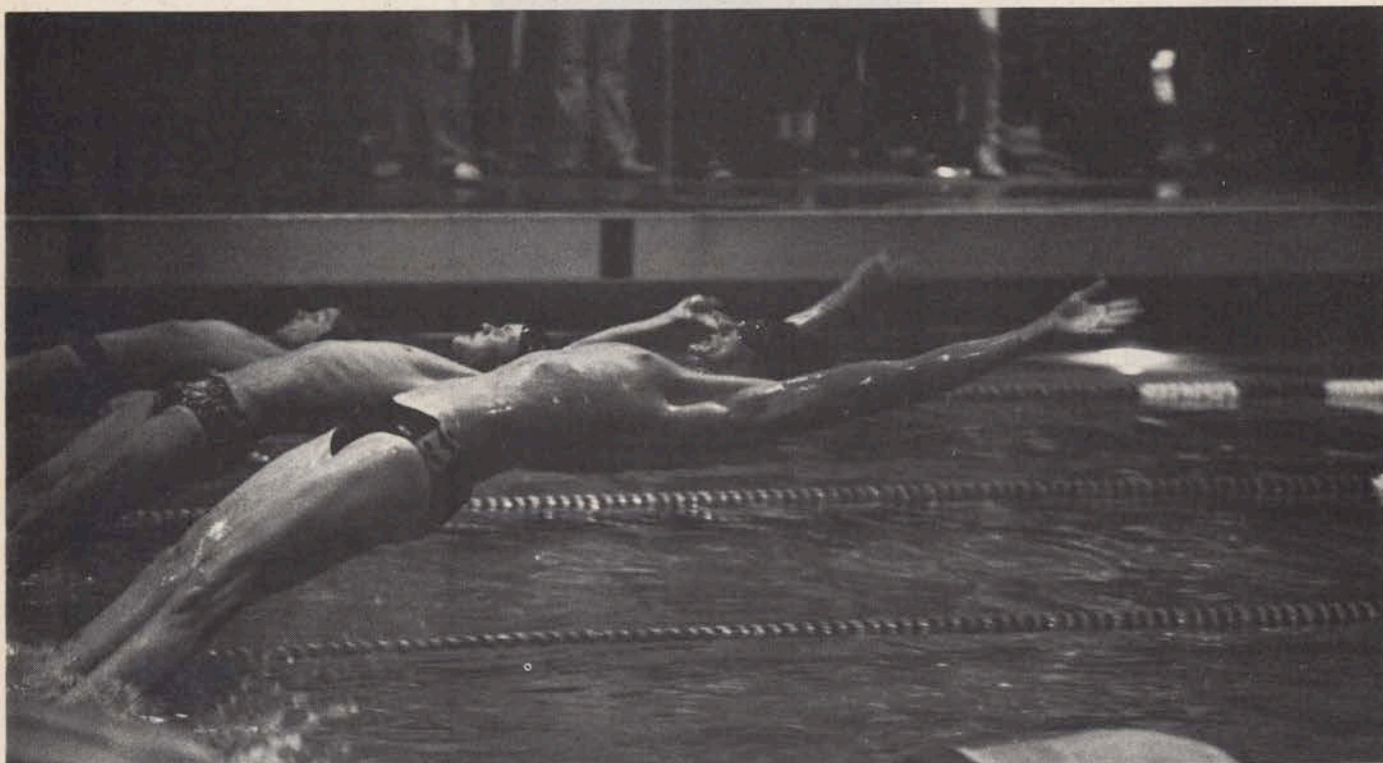
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TONY FREEMAN

# KICK-IN-THE-PANTS DEVELOPING



The light on these swimmers came from fixtures on the ceiling 70 feet above the pool. At ASA 400, exposure would have been  $\frac{1}{4}$  second at f/2. Peroxide pushing to increase film speed allowed me to use a high enough shutter speed to stop all movement.



First, develop your film for ASA 1200 in Acufine or Ethol UFG.



Second, transfer film to an airtight jar with an inch of hydrogen peroxide.



Third, again transfer film to container that can be heated.



How would you like ASA 400,000 film, developed in boiling alcohol for one month while working a voodoo spell over the film tank? And with Panatomic-X grain structure from Tri-X film, to boot.

Preposterous? Of course it is, but periodically someone comes up with a way-out push-processing technique—a magic new way to enhance the sensitivity of film. I've tried most of them; usually they do not pan out too well.

But recently I've come upon a simple, inexpensive film-pushing technique that really does the job for me. I get an effective ASA of 3200 from Tri-X film, with a tonal range and grain that come pretty close to that same film shot at its normal ASA 400. The film is first developed in a high energy "compensating" developer like Acufine or Ethol UFG. These developers give maximum film speed, offer fairly fine grain, and "compensate" for excessive subject contrast by developing the shadows more fully than the highlights.

Then comes the special part. The film is allowed to "cook" in the fumes of common household hydrogen peroxide. That's right. The same stuff that you pour on cuts, and giggle as it bubbles and fizzes all over the place. (When I was a kid I considered it almost worth cutting my finger just to get the peroxide treatment because it was such fun.)

The process is simple enough, but it does require a few more minutes in the darkroom. But who cares about that? We all enjoy our lab time, don't we? Well, in this case the extra time will be worth it when you see the results.

#### SHOOT FOR THE SHADOWS

Shoot your Tri-X rated at ASA 3200, a fine speed for sports events in a gym, rock concerts, or your daughter's piano recital. Don't cheat, now. Read your meter for the shadows. It is easy to claim high exposure indexes with high-light meter readings, but shadows are the real key to true film speed ratings. What good does it do to have a negative in which a person's white shirt registers nicely, but whose face prints too dark?

When you meter the shadows, the peroxide process will give you negatives with detail everywhere (except extremely bright or reflective highlights, such as football field lights or car headlamps). Even though you get excellent

#### WHAT "PUSHING" FILM IS ALL ABOUT

Pushing film is a term used for what happens when you underexpose and then must overdevelop film, in order to get a printable negative if you photograph in a low-light setting. What you are doing is, in a sense, pretending that the film has greater sensitivity to light by assigning it a higher exposure index (ASA).

Actually, however, the film's sensitivity does not and cannot really change. Therefore, according to many photographers, there is no such thing as true push-processing. It's all a numbers game.

Nevertheless, whether a film's sensitivity changes for real or not, film always has a potential for greater or lesser development. Depending upon various factors such as the mix of chemicals in the developer, its temperature, and the amount of agitation used, more—or less—of the light-struck silver particles embedded in the film emulsion will be acted upon to produce black metallic silver.

With the use of hydrogen peroxide ( $H_2O_2$ ) plus a little heat, oxygen is liberated to act with silver in the film emulsion that might not otherwise have been developed. Thus there appears to be a genuine increase in development due to the peroxide treatment.■

detail in the shadow portions of the negative, the peroxide process will not block up the highlights and turn them into black blobs of silver. So, be honest with your exposures and you will be happy with the negatives.

#### COMPENSATE AND AGITATE

Once in the darkroom, you begin by loading your film into your usual tank in your usual manner. Develop it in Ethol UFG, Acufine, or a similar compensating developer. "Normal" development

in these soups doubles or triples the exposure index anyway, so develop for what would produce an ASA 1200 negative. I use UFG most of the time and find that the recommended development time of 4 minutes at 75°F is fine. The Acufine time is also 4 minutes at this same temperature.

A word about agitation: be gentle! Follow the manufacturer's recommended agitation cycle; in the case of UFG, agitate for the first 15 seconds of development, followed by 5 seconds each half minute. When agitating, don't try to make a martini shaker out of your developing tank. But remember that it is necessary to do some agitation or your negatives will be very lacking in contrast. The main thing is to strike for a mid-point and always do it the same way.

Following development, rinse the film with plain water for a minute or so. Allow the film to drain (in the dark, of course), for 1 minute after this rinse.

#### THE PEROXIDE PUSH

At this point, you'll need two "special" supplies: an 8-ounce bottle of hydrogen

**"Cook the film in hydrogen peroxide fumes. That's right—the same stuff you pour on cuts.**

peroxide, 3 percent, the kind sold in the drugstore; and a container to hold the film while it is "exposed" to the peroxide fumes. I use a jerry-built contraption consisting of an air-tight glass jar large enough to hold a platform constructed of three film canisters, as well as a reel of film.

Now here's the trick. Place about an inch of hydrogen peroxide at the bottom of the jar, fill the canisters with hot water (about 115°F), and, in the dark, transfer your film on its reel to the jar.



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Set the film atop the platform, making very sure the film *cannot* touch the peroxide. Close the jar tight. The warm water inside the cannisters will heat up the peroxide and activate it, so that the "pushing" process moves more quickly to completion. The process will work even if you do not use the hot water, but it will take longer to complete.

**"I get an effective  
ASA of 3200 from  
Tri-X film, with a  
tonal range and  
grain that come close  
to the same film shot  
at its normal ASA  
400."**

An alternate arrangement is to hang the film from the lid of the container. You might arrange a hook device made of coat hanger wire.

Allow the film to remain in the hydrogen peroxide fumes for 10 minutes. Agitate very gently so that the reel will not fall off its resting place, by swirling the outer container slowly for 5 seconds each half minute. Remember not to let the liquid peroxide reach the film. After the 10-minute peroxide treatment, move the film and reel, in the dark, to an empty container. A stainless steel film tank works well, but anything that can stand a little heat will do. Keep the film in this container at about 110°F for 5 minutes. I place it in front of an electric heater, but a water bath would do the job.

Following this "sauna bath," move the reel to the fixer and finish processing your film in your usual manner.

You are likely to be very pleasantly surprised with the negatives produced by this method, but as usual, it is a good idea to try it out on an experimental subject to fine-tune it to your technique and style. You can expect a genuine film speed (shadows) of ASA 3200. Grain will be almost the same as Tri-X shot at 400 ASA and the tonal range is excellent, especially when you compare it to the increase in contrast that usually occurs when you push film.

Next to the good negatives I get under impossible lighting conditions, the thing I like best about the peroxide push is that its "secret ingredient" isn't some expensive, hard-to-find chemical but instead an inexpensive "household friend." So reach into your medicine chest; a low-light tonic awaits you. ■



**S**ometimes exposing your black-and-white film at the wrong ASA can be a major disaster. Suppose the pictures are for a job, or maybe your best friend's wedding. They must come out. How are you ever going to compensate for such a big error?

Don't despair. Although your negatives may not turn out as well as they would have if they had been properly exposed, chances are they can be developed so that they will yield acceptable prints.

Could this be a miracle? No, it's a technique called "inspection development," and it involves simply looking at, or inspecting, your negatives during the developing process.

Let's say, for example, you shot a roll of Plus-X film, which is normally rated at ASA 125, but left your camera dial at ASA 400 from the last roll, which was Tri-X. Your negatives will be approximately  $1\frac{1}{2}$  stops underexposed; therefore, you must increase the development time to achieve a printable density range. The question is, how much more time is required?

#### IT WORKS LIKE THIS

Inspection development allows you to look at your negatives before they are fixed, so that you can determine their correct development time. This must take place in a light-tight room. The only light source permitted is a dark green safelight that has been specifically designed for panchromatic film—film that is sensitive to all colors—because all standard black-and-white films are panchromatic. Dark green safelights may be purchased in any well-equipped camera store, and cost about \$11. It is also possible to purchase a No. 3 dark green filter that will fit on your existing safelight. Filters range in price from about \$5 to \$11, depending upon their size.

The safelight should be placed 4 feet from where the

# TOOLS & TRICKS

MARGIE McCLOY

## HOW TO SAVE YOUR ASA

You goofed. You just shot a whole roll of film with your camera dial set at the wrong ASA rating. With a sinking feeling in your stomach, you realize you have overexposed or underexposed every frame on your roll. What can you do?



*Pictured is that once-in-a-lifetime moment. Will your film come out?*

film will be inspected. Your film must be loaded onto the reel and placed in the film tank in complete darkness, as usual, so be sure to keep the safelight off when you load the film. When your film is securely in the tank, you may turn the safelight on. Because of the very limited amount of light offered by this safelight, you should allow at least 5 minutes for your eyes to adjust before pouring the developer into the tank. With the safelight in position and your eyes adjusted, you're ready to begin processing your film. Note that if you attempt to inspect your film too early in the development process your film will fog. It must be at least partially developed before the tank can be opened.

Let's go back to your problem roll. If you are using Kodak D-76 developer at full strength, the normal suggested time is 68°F for Plus-X film is  $5\frac{1}{2}$  minutes. But you shot the film at ASA 400, so it needs longer development. Process it as usual for  $4\frac{1}{2}$  minutes (or 1 minute less than the suggested development time for Plus-X film). At this point, remove the reel from the tank, and carefully unwind a portion of the film (four or five frames) so the emulsion side is facing you. The key thing to look for is a rich black which still retains detail. If there are no rich blacks in the negatives, the roll needs further development, so rewind the film and place it back into the developer. Check the film again once per minute until you are satisfied that the blacks look rich enough, meaning that proper development has been achieved. Don't expose the film to the safelight any longer than absolutely necessary when you are examining it.

Note that the white areas you'll see in the negatives are the unexposed silver halides; these areas should remain white. Later, after the fixer is applied, the white areas become clear, giving the negative the look with which you are familiar.



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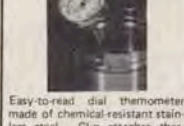
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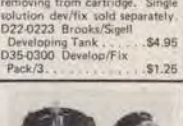


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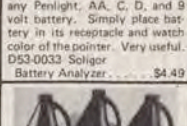


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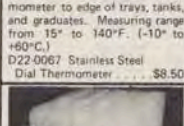
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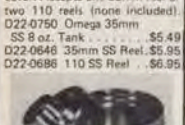
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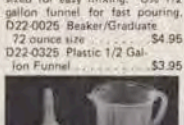
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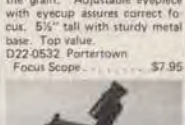
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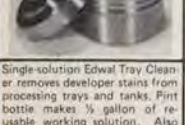
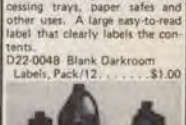
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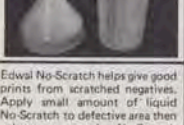
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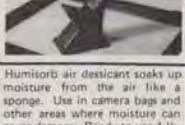
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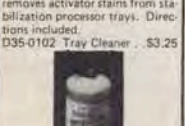
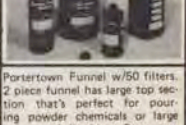
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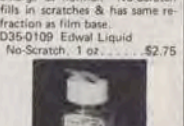
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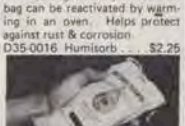
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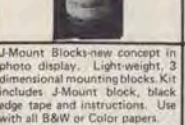
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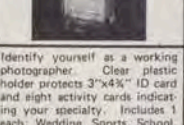
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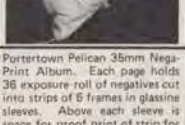
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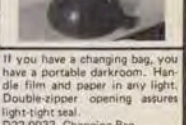
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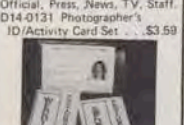
Portertown Pelican 35mm Neg-Print Album. Each page holds 36 exposure roll of negative cut into strips of 6 frames in glassine sleeves. Above each sleeve is space for proof print of strip for quick & easy identification.  
D56-0091 Pelican 35mm Neg-Print Album \$2.49



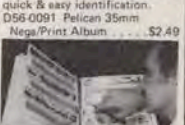
New easel style Test Printer is designed to make 6 "test-strip" exposures on a single sheet of 8x7 paper. Sliding covers are moved in succession to uncover a slot for test exposure. Result is 6 graduated densities across the 5x7 test print. Accurate.  
D22-0722 Test Printer \$11.95



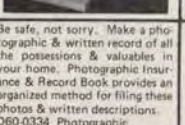
If you have a changing bag, you have a portable darkroom. Handle film and paper in any light. Double-zipper opening assures light-tight seal.  
D22-0033 Changing Bag Medium 17x16" \$8.50  
D22-0030 Changing Bag Large 27x29" \$13.95



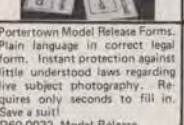
Portertown Funnel w/50 filters. 2 piece funnel has large top section that's perfect for pouring powder chemicals or large volume of liquids. Press two halves together with filter paper between for great solution funnel.  
D22-0522 Funnel Funnel with 50 filters \$3.50



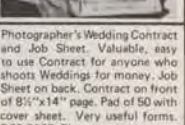
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D22-0522 Funnel Funnel with 50 filters \$3.50



Portertown Funnel w/50 filters. 2 piece funnel has large top section that's perfect for pouring powder chemicals or large volume of liquids. Press two halves together with filter paper between for great solution funnel.  
D22-0522 Funnel Funnel with 50 filters \$3.50



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It takes practice to determine how much more development time your negatives need. If you don't want to risk learning on the roll you're trying so hard to salvage, invest in a test roll of 20-exposure film. Select a subject with an equivalent amount of contrast, and shoot the whole roll, exposing it properly.

Now try the inspection process. Again remove the film for the first inspection 1 minute before the manufacturer's suggested development time. The negatives should appear thin; the blacks will not be black enough. Develop for 20 more seconds, and check again. Continue this process every 20 seconds until you have reached the suggested development time. At this point, the negatives should have reached approximately the proper density. Memorize what they look like, and continue developing. Again re-

## "These shots must come out!"

check every 20 seconds for another 2 minutes. At this time you should notice that the negatives are too dense—the white areas are muddy and the black areas are blocked up and show no detail.

The differences may appear subtle at first, but as you train your eyes the subtleties will become more obvious. Eventually you will know at a glance roughly how much more time your negatives need, thereby minimizing the number of times they are exposed to the safelight.

When your problem roll is developed to the proper density, fix and wash as usual. And pat yourself on the back. You have just saved that "had-to-have" roll. ■

Margie McCloy is a Vermont based freelance photographer and writer.

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# OUT, DAMNED SPOTS!

Do your prints have measles? You know, prints that look like they were sprinkled with coarsely ground white pepper? Here's how to clean them up.

**D**o you see spots on your prints even after you've taken the precaution of hanging your negatives to dry in the still air of your shower, after running the water for a few minutes to wash out the dust? My prints used to be plagued with these mysterious spots—and even going to the expense and bother of building a bulky drying cabinet foiled to cure the epidemic.

After a bit of detective work, I tracked down the twin causes of my hard-core troublemakers. First, my wash water was embedding particles of rust and dirt in the film emulsion. Second, the *wetting agent* I used in the final rinse formed tiny scum spots on the backs of my films as they dried. Fortunately, I quickly found that both problems can be easily eliminated. Here's how.

## THE WATER FACTOR

Have you checked the quality of your water supply? My darkroom tap water comes from reservoirs 200 miles distant through a 75-year-old aqueduct lined with several inches of scale, rust, dirt, and algae. Some of the city water mains that serve my home are over 100 years old and the pipes in my house are past 40. If I washed my films in water coming directly out of the tap, I'd have a vortex of swirling water driving bits of rust and dirt into my soft, sticky film emulsions. Every one of the dirt specks on 35mm film would be magnified eight to ten times in an 8x10-inch print, 16 times in a 16x20. And dirt specks from the wash water can't be removed by any cleaning method. The only cure is to filter your water.

There are two basic types of water filters to consider: odd-on filters designed to attach to your sink faucet or water tap, and in-line water filters that you or your plumber can permanently install on your incoming water lines.

The first water filter I ever purchased was a Thomas Micronyl Filter, still marketed today as the Bogen Fotofil water filter for \$39.95. This filter is an odd-on type with a clear plastic body that houses a filter element made up of

stocked, serrated nylon disks. It can filter out all particles larger than ten microns (one micron equals 1/25,000 inch) without impeding water flow.

**"My filter would blast off the end of the tap like a toy water rocket."**

Unitron makes a self-cleaning filter unit which also has a permanent filter element. But this filter can be back-flushed without disconnecting it from the tap. Constructed of plastic, it filters out water-borne particles down to 20 micron size and sells for \$17.95.

Unicolor offers an add-on filter that is mounted on the wall next to your sink. Made of plastic, it is connected to your faucet with tubing. It uses replaceable dual-element filter cartridges which have an outer layer of cellulose fiber that filters out particles as small as five microns, while an inner core of activated



A filter like the Bogen Fotofil removes dirt, rust, and scale particles before they can become embedded in your wet film.

charcoal removes chemical impurities. If you live in a city with water that tastes like a swimming pool, or get water that smells like rotten eggs from a country well, this filter is for you. The basic unit lists for \$35, the cartridge for \$15.

All of these add-on filter units incorporate plastic parts. They can be damaged by running hot water through them. If you need to draw water hotter than 105°F for mixing chemicals or cleaning up, disconnect the filter from the faucet first.

## HEAVY-DUTY FILTERS

There are situations where an odd-on filter isn't adequate. I once had a darkroom in a building that had such bad water pipes that my odd-on filter would completely clog every 30 minutes and blast off the end of the tap like a toy water rocket. If you have rust and scale problems with your water supply, you should filter *all* of your water. This will require the installation of the heavy-duty in-line type of water filter on your incoming sink lines.

These in-line filter units have outer housings made of stainless steel or brass for hot water lines, and plastic for cold water. Most use disposable cylindrical filter elements made of honey-comb-wound cotton or compressed cellulose compounds. These filters are available through the larger photographic and industrial plumbing supply houses. Stainless steel units cost about \$90, plastic ones about \$40. Replacement cartridges, which can last for several months, range in price from \$7 to \$14.

What rating of filter should you use? A 20 micron speck embedded in your film blown up ten times will make a spot on your print about 1/100 of an inch in diameter. This is just large enough to be distracting on the tip of someone's nose, and just small enough to be hard to cleanly spot out with a spotting brush.



Careful removal of all excess wetting agent from the base side of films with lint-free wiping cloths is one sure way to avoid formation of scum.



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Generally, water filtered down to 10 microns is best if you are washing 35mm negatives.

### FIGHTING SCUM

Let's assume that your water is already filtered. Do you still have spots in your prints after you have carefully cleaned your negatives? If you do, the likely source is the wetting agent you soak your films in before you hang them to dry.

A wetting agent, like Kodak's Photo-Flo, is a detergent that reduces the surface tension of the water so that it will flow off your film more uniformly when the film is hung to dry. This prevents the formation of water marks in the emulsion.

The best way I have found to eliminate wetting agent scum is to wipe down the back of the film before it dries with a disposable lint-free photographic wipe. I use Premier Photo-Wipes made by the Sorg Poper Company, available in most photographic supply stores in boxes of 75 multi-ply wipes for \$3.25.

A wetting agent does a fine job on the emulsion side of your roll films and on sheet films. But it tends to bead up on the base (back side) of the film. When the beads of water evaporate, they leave behind a residue of dried wetting agent.

When I hang up a roll of film to dry, I take a Photo-Wipe out of the box and fold it in half. I place it very lightly against the back side of the film and draw it down the length of the film with a single continuous stroke. I don't press hard; instead, I use the Photo-Wipe to soak up the wetting agent. I fold and refold the Photo-Wipe to expose a fresh dry wiping surface and continue to softly wipe and rewipe the back of the film until all of the wetting agent has been removed. If the wipe becomes saturated, throw it away and continue with a fresh one.

### THE ULTIMATE WIPE

Certain 120 roll films have film bases that have been coated with a gelatin retouching layer. When wiping down the backs of these films, a dampened Photo-Wipe can, occasionally, stick to the retouching layer and shred. For these films I use a special industrial wiping cloth known as Texwipes. Texwipes are woven cellulose wiping cloths that look and feel like silk. They are lint-free to the proverbial third decimal place and twice as expensive as Sorg's Photo-Wipes, \$26.50 for a box of 300 9x9-inch wipes. Unfortunately, they are not available in photo stores. You have to order them directly from the Texwipe Company, P.O. Box 278, Hillsdale, NJ 07642.

By using a good water filter and wiping the backs of my drying films, I've been able to virtually eliminate the laborious chore of print spotting. You can too! ■

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# FILING YOUR PHOTOS PAYS OFF

A filing system for your photographs can mean both time saved and sales made.

**"T**he most common problem I encounter as a photo buyer," says Sherry Morris, Managing Editor of *Now* and *Glad* magazines, "is handling photos which aren't numbered in some manner so that they can be easily identified. It's not easy to write 'photo-of-two-kids-sitting-on-a-walk-outside-school' when I'm trying to describe a picture for my files—or when I'm writing to the photographer who took it in the first place!" Obviously, there's an important message for everyone who wishes to sell photographs in this editor's complaint. In a word, organize!

But organizing your stock photos for efficient and profitable sales doesn't mean simply tacking a number to each photo and hoping for the best. It means setting up a system based on some kind of master plan, one that will make it easy for you and the picture buyer, to find what you're looking for with a minimum of hassle. Organizing now is sure to pay off later, as your file of photos grows from perhaps just a few dozen to many thousands.

One good filing system consists of three parts: (1) a combination of letters and numbers for each color transparency or black-and-white photo and negative, (2) a collection of 3x5-inch cards bearing each letter and number, and (3) some kind of transmittal form or packing list to include with your submissions to editors.

In Cordell, Oklahoma, former pharmacist and now full-time freelance photographer Bob Taylor has used such a system for over 30 years. Taylor and his wife Wilma set up their original files in 1947 based on three major categories: agriculture, human interest, and scenics. Since then the Taylor files have grown to include 12 major categories with many subdivisions. "It's an ongoing process," says Taylor.

## A SIMPLE SYSTEM

As with all successful filing systems, Taylor's is the essence of simplicity. Each of his 12 major categories has a number. For example, the number 1 represents agriculture. Each subdivision of this category gets a letter. So, for example, 1A represents "Farm Ani-

mals" and 1B represents "Poultry." To each of these classifications, Taylor adds a number which pinpoints a specific black-and-white print or negative. For example, 1A-123 would be photo number 123 in the category "Farm Animals." For color transparencies Taylor simply places the letter "C" after the 1A. Thus, 1AC-1756 would denote the color transparency bearing number 1756 in the "Farm Animals" category.

When he gets a call for a specific photo, Taylor can find it quickly and efficiently. But this is only one-third of his filing system. The second part consists of a file of 3x5-inch index cards, each of which bears the file number of a photo as well as a brief description. "Each time a photo sells," he said,

"Wilma lists the sale, date, buyer, and price on the coded file card representing a particular photograph." In this way, the Taylors keep up-to-date on what photographs are selling best as well as on how much each photograph is grossing. "Frequently," he concluded, "Wilma will receive a request for a photograph in which the buyer will want to know if the work has been sold before and if so, to whom. This file card index makes it quick and easy to locate this information."

The third part of the Taylor filing system is a two-part packing slip or transmittal form. Under his letterhead, Taylor provides "ship to" information as well as space to enter the numbers and descriptions of the photos he ships to clients. Because this memo-sized slip has three holes for insertion into a small three-ring binder, it serves not only as a quick reference but also as a kind of stock list for the buyer to keep in his or her files. The second copy of the slip remains in the Taylor file as a final check after photos are returned.

## INFORMATION PLEASE

Of course, if you take the trouble to set up a careful filing system like the

**"Mother Love"**—A file number on the back of the photo, 1A-160, indicates that it is the 160th photo entered under the category of "Farm Animals." This picture has netted \$1,200 to date.

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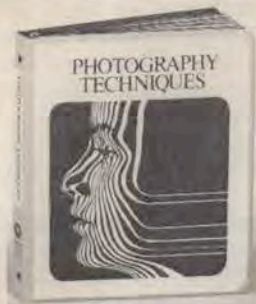


Bob Taylor

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## "What happens if one of your unmarked photos gets lost in the shuffle?"

Taylor, and then neglect to include your name, address, and photo reference number on the back of each photo you send out (or on each slide mount for 35mm color), you could be in deep trouble. After all, each month editors and other photo buyers look at thousands of prints and slides. For the most part, these professionals are careful and conscientious. But what happens if one of your *unmarked* photos gets lost in the shuffle? If you're lucky, a kindly editor will file such work in a box with other lost sheep rather than in the waste basket.

For this reason, make sure you rubber stamp your name, address, and phone number on the back of each piece of work you send out. And always write in your photo file number too. In addition, many photographers like to add additional information to make sure there will be no later misunderstandings. J. R. Williams of Aiea, Hawaii includes his telephone number, the U.S. copyright notice, and the admonition that "Any use or reproduction of this photograph must credit J. R. Williams." Brent Jones of Chicago, Illinois states simply, "Please credit Brent Jones." Reb Materi of Saskatchewan, Canada touches all bases with "This photograph may be reproduced only in the manner specified on invoice. Right to reproduce it is granted on acceptance and payment of invoice. When purchased it is for one reproduction only (unless specified otherwise on invoice), and it must not be rented, loaned, syndicated, or reused without permission." Look at it this way: an 8x10-inch print has 80 square inches of blank space on the back. Why not put this space to work for yourself as well as for the photo buyer who will have nothing but respect for your professionalism?

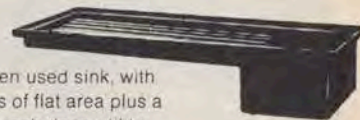
One final word: your stock file of photos and your filing system are more than just a collection of photos and numbers. They are really a mother lode that can be mined profitably for many years to come . . . and even after you've gone on to that great darkroom in the sky. So treat them with as much conscientious, systematic care as possible. With the help of a good filing system, your photos can pay off in handsome dividends. ■

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# GOING WITH THE GRAIN



A dramatic rendition of jazz star Dizzy Gillespie obtained by the random-dot process.

Every instructor in every black-and-white photography class I ever attended was bent on teaching me to produce fine-grain pictures. But I've found that I sometimes like grainy prints. In fact, I occasionally want a grainier look than I can possibly get with conventional methods. Fortunately, I've recently come upon a new and little-known darkroom process that gives me extra-crisp, high-contrast "grain prints" with minimum fuss and bother. The grain pattern I get is snappier and often more interesting than I've gotten with other grain-inducing tricks I've tried, like printing through a grained texture screen.

The process I'm talking about is "making random-dot images"; the final print is composed of tiny black "dots" or "grains" in a variety of shapes and sizes. Since high-contrast film is used in the process, the edges of each grain are very sharp and well-defined. And random-dot images are quite easy to make—provided you start with the proper materials. You must use Kodak's Kodalith Fine Line Developer and Kodalith Ortho Film 2556, Type 3. No substitutions please—only this film/developer is guaranteed to work. You

also need a flat-bottom developing tray such as a Cesco-Lite by Photoquip, P.O. Box 730, Fernandina Beach, FL 32034 or a Richard's tray, P.O. Box 2910, Van Nuys, CA 91404. A tray with ribs or ridges will produce unwanted stripe-marks on the final image.

If you use 8x10-inch sheets of ortho film, you can contact print your final image, which of course will then also be 8x10 inches. You can also make a smaller negative (the largest one that will fit in your enlarger) and then enlarge it to produce a final image of any size. This latter procedure provides even greater apparent graininess than the contact-printing technique.

## SETTING UP

Mix the Fine Line Developer according to the package directions. It will make a gallon of A and a gallon of B solutions. To make a working solution, pour equal amounts of A and B into your flat darkroom tray and maintain the temperature at 70°F. It's important that you maintain this temperature quite closely, so it's a good idea to put your processing tray in a 70°F water bath (a larger tray filled with tap water at the required temperature). Also, the developer

should be made fresh every 20 minutes or after three sheets of film are developed in it (figure on three 8x10-inch sheets per quart of working solution).

Make a tray of standard stop bath and one of rapid fix for film, and set up a wash tray. Your safelight should be a light red (No. 1A), although I have used an OC yellow filter with no noticeable ill effect.

Choose a low-contrast negative, preferably grainy, such as one shot on Tri-X film. Place it in your enlarger and expose a test strip of Kodak Kodalith Ortho film, emulsion side up (milky color), on your easel. All density control is achieved through your exposure in the enlarger. You must do a test to determine a suitable exposure to give you the maximum detail and the desired random-dot pattern.

## WATCH YOUR DEVELOPMENT

Development is a very critical step; you must be consistent and use a special technique if you wish to achieve good results. Here's the trick. Insert the test strip into the Fine Line Developer (remember, it's at 70°F). Agitate it for the first 15 seconds only, then let it sit absolutely still for exactly 2 minutes. That's right—no agitation at all for most of the development period.

Next, place the ortho film test strip in the stop bath for 10 seconds; then fix the strip in a rapid fix such as Edwal or Kodak for 2 minutes. Rinse off in water and turn on the white lights to check for the best exposure time. If you have a light table and a magnifying glass or slide-viewing lupe you can get a better look. Inspect the test strip to see which exposure time gave you maximum detail and the clearest dot pattern. Use this time for exposing the entire sheet of

**The secret of the process is to let your negative sit absolutely still in the developer.**

film and follow the same special development process. Wash your finished film image for 10 minutes and hang it to dry. You may use Kodak Photo-Flo if you wish. Your result is a random dot positive image on ortho film. Such a film positive can be mounted as a final picture or used as an overlay in collage imagery.

## MAKING THE NEGATIVE

After your ortho film positive has dried,

Bruce Polonsky



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Contact-printing from a large sheet of  
ortho film can give a subtle, yet crisp  
grain pattern.



Bea Nettles

make a negative from it. The easiest  
way is to contact print the positive onto  
a piece of ortho film of the same size.  
Once again, you'll need to determine  
exposure time by making a test strip.

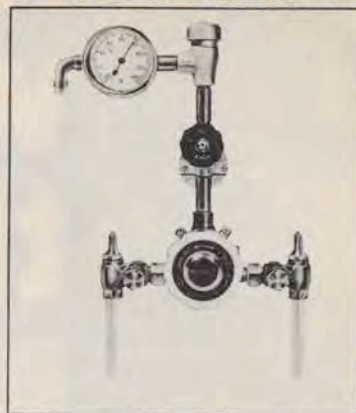
Use a contact frame that will hold the  
two pieces of film firmly together (if you  
don't have a contact frame, you can  
place a heavy sheet of glass over the  
films). Place them emulsion to emulsion,  
that is, the milky side of the unexposed  
piece facing the dull side of the positive  
image. Use your enlarger and timer to  
make the test strip. Develop the film fol-  
lowing the normal Kodalith procedures  
outlined in the package instructions:  
2½ minutes with constant agitation in  
Fine Line Developer, stop bath, fix, and  
wash. Using your test strip as a guide,  
make your random-dot negative. This  
negative can then be contact-printed or  
enlarged onto any contrasty printing  
paper, like grade #3 or grade #4 Ilfo-  
brom or Brovira.

### OTHER USES FOR RANDOM DOTS

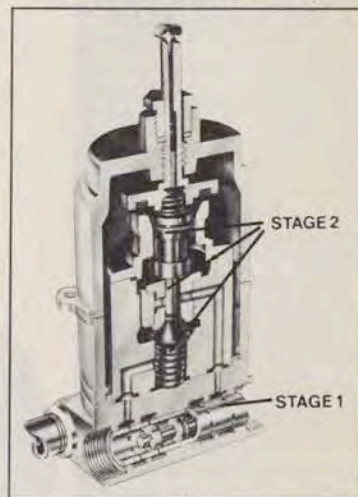
Random-dot negatives can be used  
with all of the non-silver processes that  
require contact-size negatives. They  
make beautiful cyanotypes, Van Dyke  
brown prints, and multicolored gum  
bichromate or Kwik-prints. You could  
take several of your random-dot nega-  
tives to a printer and have postcards  
made of your images, because the  
high-contrast random-dot image is ac-  
tually a "half-tone," which is what a  
printing press requires. I've found the  
random-dot process to be exciting and  
rewarding. I hope you will enjoy it as  
much as I have. ■

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# THE TRI-X TWINS: WHEN TO USE WHICH

Why there are two types of 120-size Tri-X film, and how to choose the right one.

**D**id you know there are two different types of Tri-X film available in 120-size? If you use both 35mm and 120 film, you may find this fact particularly surprising, since in 35mm there's just one kind of Tri-X. But in 120 format, you get to choose.

The Tri-X twins have confusingly similar names: there's "Tri-X Pan" and "Tri-X Pan Professional." First, don't let that word "professional" scare you; no amateur was ever arrested for trying to buy it. And, unlike some "professional" color films, Tri-X Pan Professional doesn't have to be processed within 48 hours after it's shot, or have any quirky darkroom habits that make it hard to handle.

There are some obvious differences between the "standard" Tri-X Pan (henceforth called TX) and the professional variety (abbreviated TXP). For one thing, their speeds are slightly different; TX is rated at ASA 400 while TXP is rated at ASA 320. That's  $\frac{1}{3}$  of a stop, hardly a significant difference unless you're working right on the margins of available-light shooting and need the very utmost in film speed. Another dif-

ference between TX and TXP is that you can buy the former in single rolls, but must buy the "professional" stuff in five-roll Pro Packs. TXP is also available in 220-size Pro Packs, whereas TX isn't made in 220-size at all.

Right now, you're probably trying to stifle a yawn. "Why does Kodak bother to make two films that seem to have such insignificant differences?" you're probably asking. The answer becomes clear when we look at the uses the two films are intended for. "Professional" Tri-X has been specifically designed for "studio" and "portrait" uses, whereas TX is meant to be a "general purpose" film. In other words, TXP is meant for shooting indoors with "controlled" artificial lighting, either flash or flood, whereas TX is primarily intended for outdoor work. The big distinction between photographs taken outdoors and those made in a studio doesn't have as much to do with location as it does with the type of lighting that is used. In particular, it has to do with flare. I'm not talking about those hexagonal ghost images you may have seen, but about non-image-forming light from a bright

light source (either inside the picture frame or just outside it) that bounces around inside your lens and ends up evenly spread on your film, as a kind of contrast-robbing "haze."

In outdoor photographs, the sky, sun, and other large bright areas can cause considerable flare problems. Since flare has its greatest effect in the shadow, or dark areas of the scene, general-purpose films like TX are designed to compensate for this loss of shadow contrast.

In a typical "studio" situation we have a space designed for photography with carefully placed and controlled lighting. So the typical studio photograph will have a much lower flare level than an outdoor scene. TXP is designed to record shadows with the anticipation of very little excess flare.

Fortunately, with today's excellent multi-coated lenses and careful use of effective lens shades, flare in outdoor scenes can usually be minimized. So TXP can be used outdoors, provided you're aware of the flare problem and keep it under control.

While the difference in shadow rendition between the TX and TXP is significant, it's not the most obvious tonal difference I have found. The really big difference is at the end of the photographic gray scale—the highlights or bright areas in the scene. Remember that TXP was highly recommended for portraiture. In portraiture there is one item of particular importance when it comes to tonal rendering... SKIN. With Caucasian skin this usually is a rather light shade of gray in the black-and-white image.

TX has a rather normal (and very satisfactory) response in the middle and high values. On the other hand, TXP is designed to give optimum tonal separation in the middle and high tones (particularly the high end). I find that there is an exceptional highlight brilliance and luminosity in the high values with TXP. This applies not only in portraiture, but with all types of subject matter.

Since TXP is designed for portraits, it's not surprising that it has a retouching base on both sides of the film. This allows the portrait or commercial photographer to retouch facial blemishes directly on the negative. TX does not have this feature.

I've heard arguments back and forth concerning the relative grain and sharpness of the two films. My experience indicates that there is little difference between them. If anything, the TXP might be just slightly finer-grained. Much to some people's surprise, both of these films are very fine-grained if properly used. In any case, it's good to have a choice. ■



This print was taken with Tri-X Pan Professional film, at an exposure index of 250, and exposed for  $\frac{1}{2}$  second at f/32. The subtle differences between the reflected and the diffused highlights in the chairs would not be as apparent if I had used Tri-X Pan film.



# PHILIPS COLOR ANALYZER 060

**T**he Philips Color Analyzer (PCA) 060 wants a home in your darkroom. But do you really need an analyzer to make color prints? Do you want to share the solitude of the dark with a know-it-all electronic companion? The answers to these questions might surprise you. With a look at what the color analyzer is and how it works, I think you'll get the picture.

The main unit of the PCA-060 has three color channel buttons, and dials for yellow, magenta and, cyan, an exposure time dial, and a meter with a needle. A probe unit with a condenser lens together with a clip-on-your-lens diffuser are the other main parts. The whole outfit is attractive and compact enough to fit on your enlarger baseboard along with an easel. It lists for \$289.95.

To use the PCA-060, first either pick out an "average" negative from your past efforts or make one by photographing the chart that comes with the Philips. Several patches of color, a few gray scales, and a blond lady are all pictured on the two-foot chart, which is ideal for your "average" purpose. If you use your own shot, choose one that has some skin tones, does not have a predominant color, and is a normal exposure. Then, without any help from the PCA, make a perfect print from the negative.

## PROGRAMMING THE ANALYZER

Once you've made your perfect print, it's time to program the analyzer so that it can make proper decisions when you ask it to analyze an unknown negative. Leave your "average" negative, the lens aperture, and your "perfect" filter pack in place and cover the lens with the diffuser supplied with the PCA-060. With the room light off, switch on the analyzer, push the cyan button, and turn the time dial all the way to the right. Placing the probe on the center of the easel, move it slowly until the meter needle deflects all the way to the right. You have located the "hot spot" or, more precisely, the lens axis. Now move the time dial to the number of seconds you exposed your perfect print. Turning the cyan dial until the needle nulls (centers at zero) programs the PCA with exposure time information. (The analyzer uses the cyan channel for exposure information since cyan filtration is rarely necessary for printing

from negatives.) Press the magenta button and move the magenta dial to null the needle, then do the same with yellow. To check your results, and because the colors affect each other, repeat the procedure. The PCA is now programmed. (Make note of the dial positions just in case you inadvertently move them.)

## ANALYZING UNKNOWN NEGATIVES

Now you're ready to put the PCA to work. Replace your "average" negative with a new one, focus, and clip the diffuser back onto the lens. Repeat the procedure that locates the lens axis. Press the cyan button, and turn the time dial until the meter nulls. The time dial now points to the proper exposure time for your new negative.

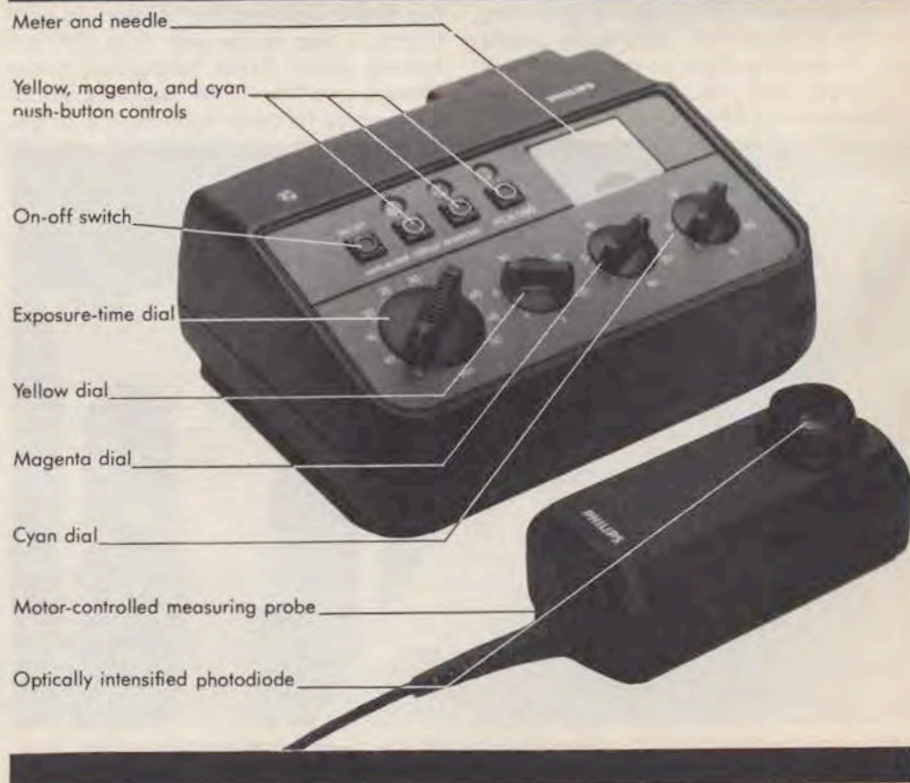
Next, press the magenta button, and add or subtract magenta filtration until the needle again nulls, then do the same with yellow. You've now got the proper filtration to use when making the print. With a color head on your enlarger, you can adjust the filtration just by turning the filter dials. Since it would

be inconvenient for those who don't own a color head to pop filters in and out of their filter drawer to null the meter, Philips provides a clip for the probe head where filters can be added right over the light sensor. Once you've determined the perfect nulling filter combination, simply slip the pack off the probe and into your enlarger's filter drawer. Remember to again check your results. That's it. The hardest thing to remember is that exposure time is determined by turning the knob on the analyzer, but color filtration is set by changing filtration on the enlarger.

## A CASE OF DISTRUST

The first time I "read" an unknown negative with the PCA-060, I was delighted with the ease and speed of using it but didn't trust its information. I had chosen the frame on the negative strip next to my average negative, and the camera setting, light, and subject matter were generally the same. Why was the PCA telling me to go from my 95Y 65M 14-second "perfect" exposure to 70Y 55M and 21 seconds? But I gave it a try, and the print was absolutely perfect, as was every one of the prints I made during the evening.

My wife, who has never tried color printing, took an "average" slide into the darkroom the next night and proceeded to guess her way to a perfect print with the Cibachrome Discovery Kit. Then she tried to program the





analyzer to read slides. This proved to be difficult; the instructions were sketchy and the procedure they recommended didn't seem to work. Finally, she tried programming exposure information on the cyan channel, adjusting only yellow filtration (since magenta filters are seldom used in slide printing). This procedure shouldn't work, but most of her prints were perfect too.

### HAZY INSTRUCTIONS

Speaking of instructions, Philips' instruction booklet for the PCA is virtually useless, but the excellent supplement

**"They say color analyzers save money on paper and chemistry. That's not entirely true."**

supplied by Hindaphoto, the U.S. distributor, makes programming and reading quite simple to understand. But the PCA still needs a separate set of instructions of equal clarity for slide printing. Also, due to its 3½-inch outside diameter, the diffuser will not fit on some enlargers and is awkward to mount on others, although it otherwise works well. An alternative size or design would help folks with too little clearance around their lenses for the diffuser supplied.

The PCA probe takes integrated rather than spot readings; that is, it reads the "color" of the entire negative or slide. Some might argue that spot-reading probes are more "professional," but the PCA's probe is easy to use, accurate, and boasts a motor drive for its internal filters as well.

### EXCITEMENT REBORN

They say color analyzers save money on paper and chemistry. That's not entirely true. They save on waste, but I've actually used more paper in the past month with the PCA at my side than in the six months before. With its help, I look forward with reborn excitement to printing sessions that swell my portfolio rather than my trash basket.

The Philips Color Analyzer is available at most photo stores; if you have trouble locating it, inquire from Hindaphoto, 446 Sunrise Way, NY 11570. ■

This product evaluation is based upon practical use rather than laboratory data because we believe a practical approach is the most relevant to the working darkroom enthusiast.



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# TEMPERATURE CONTROL: HIT THE BULLSEYE

Don't get all hot and bothered about keeping your color printing chemicals warm enough—there are many ways to keep your thermometer reading right on target.

It's a fact of life that certain chores *must* be done. The dog must be walked, the bathtub must be scrubbed, and the temperature of photographic chemicals *must* be controlled. That's especially true of color printing chemistry. In fact, if you fail to carefully control the temperature of your color processing chemicals, you virtually guarantee that you won't get satisfactory color prints. Let's look at why temperature control is so important for the color printer, and at how it can be done simply and effectively.

Most photographic chemical solutions increase in activity as temperature increases. For example, a warm developer will develop a piece of photo paper faster than a cooler one. In order to get consistent, controlled development, you must choose one particular temperature and process your paper at that temperature for a specific amount of time. In black-and-white photography, there's usually a fairly broad range of temperatures that can be used. But color chemistry is different. For one thing, color chemicals usually must be used at temperatures considerably above room temperature. And they must be *maintained* at this temperature while they're being used. Since warm solutions lose heat rapidly to the air, keeping temperatures constant can be a problem.

## WHICH TYPE OF DRUM?

Most home color print processing is done in print drums (also called processing tubes), and the temperature control method which you choose will depend on the kind of drum that you have. There are two basic types. The first is what I call the "piggy-bank" style; it sits on two little "feet" and has a "snout" through which the chemistry is poured. These drums are not immersible, are usually agitated by a motor-base, and include models made by Un-

icolor, Osawa, Premier, Beseler, and Chromega. I also include the Ciba-chrome drum in this category since it is not immersible, even though the design is different.

The other drum type is designed to be used in a water bath—I call this the immersible category. DevTec, Paterson, and Colourtronic make processors of this type. Because the water bath trays that come with these drums have space to hold bottles of chemicals in the bath, an entire processing cycle can be done at one temperature. We'll look at the ways to control temperature in water baths in a moment, but first, let's look at piggy-bank drums.

## THE "PREHEATING" TRICK

The temperature in a piggy-bank drum cannot be controlled directly. That is, you can't heat the drum while you are processing a piece of paper; it isn't designed for a water bath like the immersible types are. Since the drum easily loses heat to the surrounding air while it is being agitated, you can't start at the temperature given in the instructions—the chemistry would soon be below the recommended temperature and your paper would be underdeveloped. So, a precise but simple method of starting



With an immersible tank, you can maintain the proper temperature by adding warmer water when required.

the processing cycle at a slightly elevated temperature was devised. It's called "preheating" and is explained in detail in the instructions that come with most color chemistry kits. You must remember to preheat before each development run, but the method is easy and works well.

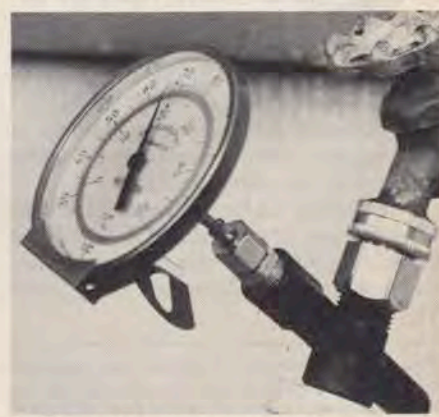
## DEALING WITH IMMERSIBLES

Now, let's look at techniques for temperature control of immersible drums. That boils down to how to keep a water bath at the required processing temperature, with temperature deviations limited to  $\pm 1/2^\circ\text{F}$ . The easiest and least expensive way is to dip water out of the bath when it starts to drift away from the temperature you want and replace it with warmer water. For this you need an accurate thermometer and a source of warm water, and you must check the temperature often. It may not sound very precise, but with a little practice you can stay within  $\pm 1/2^\circ\text{F}$  just by adding small amounts of warm water periodically.

Another way is to let warm water, at the temperature you want, flow in and out of the bath constantly. Generally, this will require a wet sink and a faucet that allows you to mix hot and cold water.

**"The temperature control methods you can use depend on the kind of color processing drum you've got."**

If you have ever tried to get water to flow out of a faucet at a given temperature, you know that simultaneously working the controls, holding a thermometer in the flowing water, and reading that thermometer requires considerable attention and dexterity. Two



Flo-Temp thermometer well in use.



Juggling faucets and a thermometer successfully can require unusual solutions.



products on the market can give you a hand with this problem. The Flo-Temp thermometer-well from Pfefer Products (485 Easy Street, Simi Valley, CA 93065) screws onto the faucet and holds a dial-type thermometer in a water mixing well. You can adjust the controls on the faucet to give you the temperature you desire. The disadvantage of this item is that the water must flow constantly to maintain the constant temperature; however, it costs only \$15. A dial-type thermometer, which you will also need, costs about \$15 too. These thermometers are available from Omega, Beseler, Premier and Simma-Color.

#### THE LUXURY OPTION

Thermostatic water-mixing valves provide a stream of constant-temperature water automatically. Water from the hot and cold pipes is mixed by a temperature-sensitive valve, which you can set to the temperature you want. The valve keeps that setting as long as water is allowed to flow through it. Automatic mixing valves are a joy to use, but alas are quite expensive; prices start at around \$250. They are available from Leedal Inc. (2929 South Halsted St., Chicago, IL 60608), Meynell Valves (58 State St., Westbury, NY 11590) and other manufacturers. Normally, these units are permanently installed at the sink.

The last way to control water bath temperature is to directly heat the water with a waterproof electrical heater. Two basic types are available: immersion heaters and heating recirculation

pumps. The first of these sits right in the water bath tray, and usually has a heat-sensitive switch which can be set to the temperature you need. Immersion heaters are easy to use, don't require a wet sink, and prices start at \$70 for the unit made by DevTec, (164 E. Orange Grove Blvd., Pasadena, CA 91103).

Heating recirculation pumps not only do what immersion heaters do, but they also move the water around. They are self-contained "black boxes" and may be set next to the bath or away from it since hoses are used to link the two. Again, these units don't demand a wet sink and are good for large water baths because they keep the water moving—this prevents cold, or hot spots in the bath. Photo-Therm (110 Sewell Ave., Trenton, NJ 08610) makes a unit which it claims is accurate to 1/10 degree for about \$150.

Any of these techniques or products will lessen the drudgery of the temperature control chore. Just as consistency in other phases of photography (choice of film, exposure technique, etc.) promotes quality photographs, consistency in the temperature of your color chemistry will provide one less troublesome variable when you try to zero-in on the correct color balance and printing exposure. While the drum preheat method is within everyone's budget, a thermostatic mixing valve will require a careful assessment of your needs. But whatever your choice for temperature control, it's easy to warm up to color printing! ■

Norman J. Tennefoss is a professional photographer and custom color lab printer.

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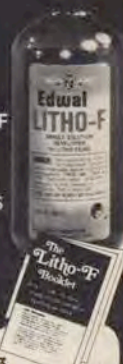
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# 10 TIPS FOR SALVAGING THIN NEGATIVES

There are many ways to turn a thin, flat negative into a rich, glowing print. Here's all you need to know.

If you're like most photographers, your negative file is chock-full of images that never reached the print stage because they were either underdeveloped or underexposed. After all, no one is perfect all the time, and equipment does foil on occasion. If you have accidentally underexposed a whole roll of black-and-white film, it often can be developed so as to yield acceptable prints. (See this issue's "Tools & Tricks" section for exactly how to do it.)

But what if you've accidentally underdeveloped a whole roll of film? Or, in the heat of the moment, underexposed and then processed normally an image you can never shoot again?

Fear not, for you may have a whole wall full of usable images hiding away in your "mistake" pile. With a little ingenuity and patience, many excessively "thin" negatives due to underdevelopment or underexposure can be printed successfully in any darkroom without the need for special equipment.

Deciding whether the negative is usable at all is the first consideration. There is a *minimum* exposure threshold that must be reached for any silver to remain on the film after development. Since shadow areas get the least exposure, they are the determining factor for choosing a printable negative. Where there is detail in important shadow areas, there is hope. You have to decide what constitutes "important" shadows—not all shadow areas in a print have to have detail. But if no shadow detail at all exists, then the negative is only usable if the image can stand on the merit of the information provided in mid-tones and highlights.

## WATCH THE CONTRAST

Even though a thin negative may have an acceptable tonal range, its low image contrast is generally the villain that must be overcome. However, prints made for reproduction should have slightly lower contrast than an exhibition print anyway, since images tend to gain

contrast at each step of the ink-on-paper printing process. Exhibition prints, on the other hand, must have the desired image contrast to begin with, since there will be no subsequent steps to enhance it.

Increasing the contrast when printing thin negatives is most easily accomplished by selecting a higher-contrast grade of paper. To determine the best contrast grade, expose and develop the paper for the proper highlight densities, and inspect the areas of the print you wish to be black. If these tones are gray rather than black, try the next higher contrast paper. Often, this alone will provide an acceptable print with a full range of tones from deep black to sparkling white.

## TEN TRICKS TO TRY

Sometimes additional measures beyond switching to high-contrast paper are needed to enhance image contrast. Here are ten hints that, used singly or in combination, will help you get the most out of your "thin" negatives.

1. Always be sure your developer solution is fresh and use a less dilute solution (1:1) or straight stock solution, if necessary, rather than the customary 1:2 dilution. This will enhance contrast and deepen the blacks.

2. Use a shorter exposure time and longer development time (up to 5 minutes with some papers) with constant agitation. Most commonly used papers will show increased contrast as a result. Long development times should be carried out in complete darkness. Turn on the safelight for inspection only during the last minute. This eliminates the possibility of fogged highlights from safelight exposure. But note that even without exposure to light, papers will display a chemical fog if developed for too long, so don't push your paper/developer combination beyond its limits.

3. The greater the magnification of any image, the greater the contrast must be to get an aesthetically pleasing print. Keeping the final enlargement size as small as possible will reduce the need for extreme high-contrast papers and minimize the apparent grain, which is accentuated by these papers.

4. If you use a variable-contrast paper, "double-filter printing" can be helpful. Use a high-contrast filter for shadow exposure and burn in the highlights with a lower contrast filter. This will give you good definition in the black ranges while maintaining adequate highlight separation.

5. Adding potassium bromide (a restrainer) or benzotriazole (Kodak Anti-Fog #1) to the developer will give greater contrast by allowing full development of the blacks while inhibiting



A print from a thin negative, shot with Tri-X; pushed to ASA 1200 in Acufine developer; printed on Agfa Brovira paper, grade # 5.

Bruce Polonsky



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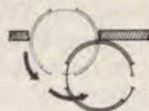
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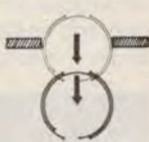
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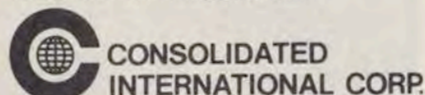
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highlight development. Although this will cool the image color slightly, it is particularly useful when long development times are necessary.

**6.** Longer exposures (1 minute or more) at reduced apertures should show a slight contrast increase. However, extremely long exposures (more than about 4 minutes) can cause what is called *reciprocity failure* which will affect shadow density, thereby reducing contrast. Safelights should always be kept off during long exposures to eliminate the possibility of fog.

**7.** Although it is detrimental to print permanence, increasing the time in the fixing bath will bleach and brighten the highlights slightly while leaving the deeper tones relatively unaffected. This can be helpful when printing for reproduction, where print longevity is not important. It is not recommended for exhibit prints or archival quality prints.

**8.** Localized bleaching by hand (using potassium ferricyanide and a brush or cotton swabs) can also reduce highlight density in specific areas of a print that has been exposed and developed to get

**"Low image contrast is generally the villain that must be overcome."**

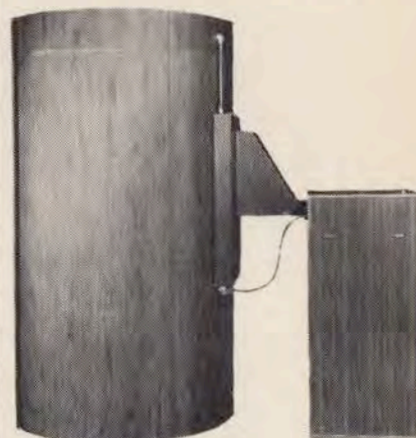
good blacks. You must use potassium ferricyanide bleach carefully—the bleach can easily run into other areas of the print where you do not want silver reduction. Start with a very dilute (pale yellow) bleach solution.

**9.** The use of selenium toner will strengthen the blacks in an image. The overall effect is slight, but it will give an apparent richness and brilliance to the print. Check to see that the paper used is recommended for selenium toning.

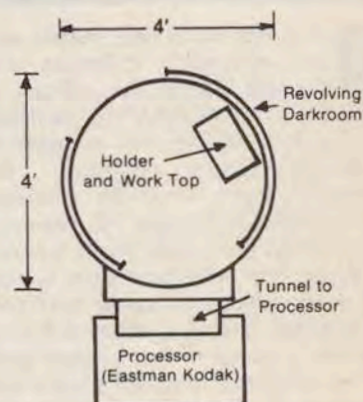
**10.** As a last resort, proportional intensifiers (Kodak IN-5 or IN-6) can be used to increase negative density. Read the instructions very carefully. These chemicals can ruin the negative entirely if not handled properly. So, it is advisable to make the best possible print before you subject your precious negative to this procedure. That way, if the negative is destroyed, a copy negative can be made from the first print.

These ten tips, used alone or in combination, should get you through most tight spots with those thin negatives. These techniques may take a little extra time, but the effort will be satisfying when that once-in-a-lifetime image comes to life on paper. ■

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# UFO INSIGHT



No, it was not a little purple person with curly antennae who showed up at the offices of DARKROOM PHOTOGRAPHY, portfolio in hand. Instead, he was a perfectly normal-appearing earthling. But where—on earth—had he obtained such wonderful images of hovering UFOs? In his darkroom, that's where!

George Post, the darkroom wizard who conjured up our cover and centerfold shots, is a very creative fellow. Give him a piece of "diffraction grating," a substance made of plastic with thousands of microscopic grooves that break up light into colors of the spectrum. Give him a space vehicle—or something that resembles one. Give him a cross-star filter, the right time of day in the city, a full moon, and of course a darkroom with a light box and an enlarger—and George produces a knock-out of a cover shot.

But where had the idea come from?

Anyone who has seen *Close Encounters of the Third Kind* would tend to think that that might have been George's inspiration. In fact, George's idea preceded *Close Encounters*. As a youngster, George read a lot of science fiction. He's been fascinated with space travel and spacemen ever since.

Not too long ago, a friend of George's, a Virginia coppersmith by the name of George Anderson, created a "spacecraft planter," and asked George the photographer to take pictures of it to use in craft shows. George Post took it from there. Wanting to emphasize the qualities that made the planter look even more space-like, George printed in a foreground landscape.

Thus began the evolution of our cover. Given George's interest in space travel, it didn't take long for him to want a bigger and better spacecraft. So he started asking around at the hobby

shops. One proprietor put him in touch with master model-maker Blaine Lemert. Lemert, as excited about the idea as George, created our UFO, battery-powered and ready for flight.

George already knew about the radiating rainbows you could get with diffraction grating. So he cut jet-shaped holes in a piece of cardboard, stuck it up on a light box, and photographed it using the diffraction grating as a filter. Voila!

The star field and the spaceship's lights were each created in a similar fashion: holes in cardboard, cardboard on light box, and photographed with a cross-star filter or, in the case of the lights, colored gels behind the holes.

It remained to put together the six separate slides: UFO, UFO lights, color jets, star field, bridge, and moon. In the darkroom, George made a "map" for printing, a piece of paper in the easel under the enlarger. On it he could plan







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where each of the elements was to go. The map is a help in reprinting as well.

George printed in each of the elements, one after the other, on what he calls the "ideal paper," Ektachrome 1993, which allows one to make prints directly from transparencies. The foreground of the picture was printed first, and blended smoothly by dodging; it is the only one of the elements that does not have a black background. Then came the ship, lights, jets, moon, and stars. A first-time print takes 4 or 5 hours in the darkroom.

We knew that we are not the only ones who would be enchanted with George Post's cover shot. We believed our readers would like it so well that they might want one to hang on their walls. If you turn to our centerfold, you will find a 17x20-inch poster of another of George's creations. And, if you still aren't satisfied, you can get an even larger poster of our cover from Celestial Arts, 231 Adrian Rd., Millbrae, CA 94030 at \$3.50 postage-paid.

Should you want to try some far-out effects yourself, Edmund Scientific Co., Edscorp Bldg., Barrington, NJ 08007 or the Lumens Co., P.O. Box 3407, Culver City, CA 90230 have diffraction gratings for sale. Then, all you'll need to go George Post one better is to find a little purple person to pose for you. ■



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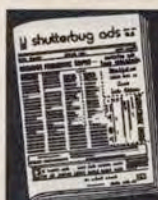
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# CALENDAR

## MAY

**San Francisco Museum of Modern Art.** Exhibition: Jim Dong, Jim Goldberg, Crystal K. D. Huie, Kate Kline May, Danuta Ofinowski, to May 20; "Mirrors and Windows: American Photography Since 1960," June 8 to July 29. Van Ness Ave. and McAllister, San Francisco, CA.

**Galerie Fiolet.** Exhibition: Burk Uzzle, May 5 to June 2; Lee Friedlander, June 15 to July 14. Herengracht 86, Amsterdam, Holland.

**"Introduction to the Hasselblad System,"** a course in medium format photography. May 6, Boston, MA. Instructor Ernst Wildi, technical director of Hasselblad. Open to all photographers. Contact: Ernst Wildi, Braun North America, 55 Cambridge Parkway, Cambridge, MA 02142.

**Law Enforcement Photography Workshop.** May 7-11, Dallas, TX; June 4-8, Rochester, NY. Open to police and fire department photographers with one year experience. Contact: Law Enforcement and Security Markets, Eastman Kodak Co., 343 State St., Rochester, NY 14650.

**Witkin Gallery.** Exhibitions: Scott Hyde and Betty Hahn, May 9 to June 16; David Plowden and Marion Post-Wolcott, June 13

to July 14. 41 E. 57 St., Suite 802, New York, NY.

**Brooklyn Museum.** Exhibition: Gertrude Kasebier (1852-1934), May 12 to July 8. Eastern Pkwy. and Washington Ave., Brooklyn, NY.

**Brooks Institute Gallery.** Exhibition: Gernot Kuehn, May 14 to June 3. 2190 Alston Rd., Santa Barbara, CA

## JUNE

**Photographic Workshop in Ireland.** June 3-16, July 1-14. For those interested in black-and-white photography and the culture of Ireland. Tuition \$900. Contact: Ron Rosenstock, 91 Sunnyside Ave., Holden, MA 01520.

**Ansel Adams Workshop.** Two sessions: June 8-15, 17-24. Instructors include Ansel Adams, Todd Walker, Arnold Newman, Morley Baer, Barbara Crane, Ann Noggle, James Alinder, Al Weber, and Alan Ross. Cost \$400 per session. Contact: Bob Baker, Rt. 1, Box 181, Carmel, CA 93923.

**The Douglass Visual Workshops:** Communicating with Pictures. For people who use photographs in publications; covers photo-editing, layout, and design. June 11-12, Los Angeles; June 20-21, San Fran-

cisco. Contact: Philip N. Douglass, 212 S. Chester Rd., Swarthmore, PA 19081.

**Sickles Super Seminar.** Part I, "The Creative Slide Seminar" and Part II, "Multi-Image Presentation Seminar," June 11-15, Phoenix, AZ. \$325 for each part, \$595 for both. Contact: Steve Jacobson, Sickles, Inc., P. O. Box 3396, Scottsdale, AZ 85257.

**Zone VI Workshops** with Fred Picker. Black-and-white only, beginners to professionals. June 17-27, August 12-22, Putney, VT. Cost: \$525 for one session. Contact: Lil Farber, Zone VI Studios, Newfane, VT 05345.

## JULY

**Nikon House Gallery.** Exhibition: Pictures of the Year, winning entries from annual competition sponsored by National Press Photographer's Association and the University of Missouri's School of Journalism. July 10-28. 620 Fifth Ave. at Rockefeller Center, New York, NY

**88th International Exposition of Professional Photography and 27th National Industrial Photographic Conference.** Sponsored by Professional Photographers of America. July 28 to August 1. O'Hare Exposition Center, Rosemont, IL. Contact: Donna R. McMahon, PP of A, 1090 Executive Way, Oak Leaf Commons, Des Plaines, IL 60018.

If you want to see your organization's upcoming event listed on this page, please let us know. Write "Calendar," DARKROOM PHOTOGRAPHY, 609 Mission St., San Francisco, CA 94105.



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